

# **AMERICAN GAS ASSOCIATION MONTHLY**

**JULY-AUGUST • 1937**

**New National Advertising Plans**

**T. J. STRICKLER**

•

**Building for Kitchen Efficiency**

**B. K. SLAUGHTER**

•

**Determining Hourly Gas Input Rates**

**F. O. SUFFRON**

•

**A. G. A. Convention in Cleveland**



# MODERN KITCHENS and BASEMENTS

13 Chapters—47 Pages

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11 Full Page Kitchen Layouts

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**AMERICAN GAS ASSOCIATION, 420 Lexington Avenue, New York, N. Y.**

# AMERICAN GAS ASSOCIATION MONTHLY

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# I can "Tune-in" any temperature on my new Gas Range



**THE MODERN GAS OVEN** is a miracle of convenience! Oven heat control takes the guess-work out of baking. You can get exact temperature up to 550°—and new ovens preheat *twice as fast* as in your old range. Many new gas ranges have clock control which even turns your oven on and off for you. Insulated oven walls keep your kitchen cool—and save gas.



**ONLY WITH GAS** can you get *instant intense* heat. Top burners on the modern gas range light automatically. New simmer burners enable you to do "waterless cooking" which saves flavor and vitamins. Pots stay bright when you cook with the clean blue gas flame. Porcelain enamel top burners are easier to clean. In fact, the whole range cleans as easily as a china plate.



**THE NEW SPEED BROILER** cuts broiling time practically in half. New high broiling temperature seals in more flavor. There's no smoke to soil kitchen walls and curtains—new perforated grills drain off fats and keep them away from the flame. The broiler in the modern gas range slides out in a drawer for easy turning. In appearance the new gas ranges are unsurpassed. Let one dress up your kitchen, and make cooking easier, and more economical than ever.



See the beautiful new gas ranges at the showroom of your Gas Company or appliance dealer. You'll find them surprisingly low in cost. Look for this Seal of Approval of the Testing Laboratories of the American Gas Association when you buy gas equipment. Appliances bearing this Seal comply with national requirements for safety, durability and efficiency.



**FREE!** Send for booklet, "Planning the World's Easiest-to-Keep House," by CONSTANCE HOLLAND; a valuable guide for saving time, money and effort in your own home. Write American Gas Association, 430 Lexington Ave., New York.

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Street \_\_\_\_\_  
City and State \_\_\_\_\_

G-94

## GAS IS YOUR QUICK, CLEAN, ECONOMICAL SERVANT

*The first advertisement in the 1937-38 series*



# AMERICAN GAS ASSOCIATION MONTHLY

James M. Beall, Editor

## National Advertising Plans for 1937-38

By T. J. STRICKLER

Chairman, Committee To Conduct National Advertising

WHAT will be the theme of the gas industry's national advertising program for the second year? Will some of the advertisements appear in metropolitan newspapers? Are any changes to be made in the list of magazines to be used? What fields will be reached by the industrial gas advertising? Will kitchens again be featured in the domestic advertisements or will the emphasis be placed on gas appliances? What slogan will be used? Will more tie-in material be made available? What kind of booklet will be substituted for "Controlled Cooking"?

These and other inquiries recently received at Association Headquarters reflect in part the keen interest manifested in the gas industry's program of national advertising which enters its second year on July 1. It is the purpose of this article to make the initial announcement of plans for the second year's campaign, as approved by the Committee to Conduct National Advertising, at its meeting in Chicago, May 27.

Before this is done, however, it is advisable to review briefly the procedure followed the first year in order that there may be a better understanding of what we contemplate doing in the immediate future. When we speak of a program of national advertising sponsored cooperatively by the gas industry, we must think in terms of the resolution adopted by the Association's Executive Board. This resolution inaugurated the program for a period of three years. It declared that media of national circulation was to be used. The objective of the program was defined as the promotion of gas as a modern fuel for domestic, commercial and industrial purposes. These instructions, as you will note, are explicit. As a matter of fact, they constitute a blueprint of specifications for the guidance of those who are charged with the responsibility of conducting the program.

How, then, did we conduct our first year's activities? Our list of media which carried the domestic gas advertising included the *Saturday Evening Post*, *Good Housekeeping*, *Ladies' Home Journal*, *Woman's Home Companion*, *McCall's* and *American Home*. All insertions were in full page and in four colors. To supplement these general and women's pub-

lications we also carried twelve full-page black and white advertisements in the *Architectural Forum*, *American Builder & Building Age*, *Domestic Engineering*, and *Plumbing and Heating Trade Journal*. The cost of this advertising was \$413,000. More than 78,523,000 color messages appeared in print. The agency was McCann-Erickson, Inc., of New York.

The industrial and commercial gas advertising appeared during the year in *Industrial Gas*, *Iron Age*, *Steel*, *Metals & Alloys*, *Metal Progress*, *Food Industries*, *Bakers' Helper*, *Bakers' Weekly*, *Ceramic Industry*, *Glass Industry*, *Hotels & Restaurants*, *Hotel Management*, *American Restaurant*, *Beauty Shops*, *Modern Beauty Shop*, and *American Hairdresser*. The schedule of insertions varied from thirteen pages in *Iron Age*, *Steel* and *Bakers' Helper* to six pages in the two magazines serving beauty shops. The cost of this advertising was \$30,000. The agency was Ketchum, MacLeod & Grove, Inc. of Pittsburgh.

As a supplemental and supporting activity to our domestic gas advertising, \$21,000 was devoted to publicity. The results have been particularly successful from the viewpoint of the number of stories published and the circulation of the newspapers and magazines carrying these stories. Some 7,000 separate articles on gas, occupying roughly more than 1,000,000 lines of space, have been published by the newspapers. Another good source tapped during the year was the news feature syndicates such as King Features, Newspaper Enterprise Association, and the Associated Press. In the field of magazine publicity, special illustrated feature articles on gas and gas equipment have appeared in *McCall's*, *Ladies' Home Journal*, *Pictorial Review*, *Good Housekeeping*, *American Home*, *Better Homes and Gardens*, *House and Garden*, and *What's New in Home Economics*.

A third publicity activity has been a distribution of radio talks. More than 125 different radio stations have been receiving these talks and all of them, at one time or another, have broadcast some of them. These talks make specific mention of gas and gas appliances. Touching on the use of radio I would not for one moment neglect to mention

## Personnel of Committee to Conduct National Advertising and Subcommittee on Approval of Domestic Gas Copy



*T. J. Strickler*  
Chairman



*W. W. Winter*  
Vice-Chairman



*Herman Russell*  
Ex-Officio



*J. F. Pollard*



*B. J. Mullaney*



*F. D. Cadwallader*



*M. L. Sperry*



*Henry Obermeyer*



*F. J. Rutledge*



*C. E. Bennett*



*R. B. Brown*



*J. S. Spaulding*



*J. V. Strange*



*Anthony Hyde*



*C. G. Cassidy*



*H. M. Brundage, Jr.*



*W. G. Wiegel*



*Ray T. Ratliff*



*C. W. Person*  
Secretary

the Mystery Chef program which has been broadcast during the year over 17 stations of the National Broadcasting Company. This program is now being sponsored by companies having more than 6,000,000 domestic gas meters in active service. All of the broadcasts have tied in with the slogans and copy themes of our national advertising program.

To enable gas companies to identify themselves with the national advertising movement, and to enable them to tie in profitably with it, we have made available during the year many kinds of advertising material specifically designed for local use. This service has included reprints of advertisements in full color, illuminated signs, electros of elements from the advertisements, mats, price tags, cook books, photographs, etc.

During November and December, 1936, twenty-one regional meetings were held in various parts of the country, under the auspices of our Committee, to explain the national advertising campaign and to increase the use of tie-in material. These meetings proved to be very helpful in interpreting the objectives of the campaign and in stimulating local tie-in. However, we still have a big job to do to promote the more extensive use of tie-in material. We realize, of course, that many companies not presently using our services are tying in with the national drive by using material of their own origin. It makes no particular difference to us whose tie-in material is used. Our chief responsibility is to see that companies do identify themselves with the national movement, using any facilities they may choose.

To keep the industry promptly advised of campaign developments, we have issued since May of last year forty-one progress bulletins to a list of sixteen hundred executives, sales managers, advertising men, home service directors and others who occupy positions of responsibility. Summing up the first year's work in general terms, we are confident we have initiated a campaign which has accomplished much good for the gas business. Perhaps our opinion is biased, or warped, because we are so close to the picture. If this holds true, then we can rest our case on the many commendatory expressions of opinion received from executives in all parts of the country. The further fact that many gas men occupying high executive positions have expressed the desire that larger sums should be devoted to national advertis-

## CONSUMER MAGAZINE SCHEDULE 1937-38 ADVERTISING

	Aug.	Sept.	1937 Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	1938 Apr.	May	June	July	Aug.
<i>General Weeklies</i>													
Saturday Evening Post	x	x	x		x		x	x	x	x			
Life	x	x	x	xx									
<i>Women's Magazines</i>													
Good Housekeeping			x		x		x		x			x	
Woman's Home Companion		x		x		x			x		x		
McCall's		x		x			x			x		x	
Pictorial Review combined with Delineator	x		x		x			x			x		
<i>Home Service Magazines</i>													
American Home		x		x		x			x			x	
Better Homes & Gardens	x		x		x			x			x		
House & Garden		x		x			x			x		x	
House Beautiful		x	x		x			x			x		
<i>Trade and Professional Magazines</i>													
ARCHITECTURAL													
Architectural Forum		x	x	x	x	x	x	x	x	x	x	x	x
BUILDING													
American Builder and Building Age		x	x	x	x	x	x	x	x	x	x	x	x
PLUMBING													
Domestic Engineering	x		x		x		x		x		x		
Plumbing and Heating Trade Journal		x		x		x				x		x	
DEALER MERCHANDISING													
Gas Appliance Merchandising		x		x				x		x		x	
HOME ECONOMICS													
Journal of Home Economics		x	x	x		x		x		x			
Practical Home Economics	x		x		x		x		x		x		
What's New in Home Economics			x		x		x			x			

## APPEARANCE DATES OF MAGAZINES

Saturday Evening Post	Aug. 21, Sept. 23, Oct. 30, Dec. 4, Feb. 12, March 19, April 23, May 28	Woman's Home Companion	15th of preceding month
Life	Aug. 9, Sept. 6, Oct. 4, Nov. 1, Nov. 22	McCall's	10th of preceding month
Good Housekeeping	25th of preceding month	Pictorial Review	10th of preceding month
		American Home	20th of preceding month
		Better Homes & Gardens	20th of preceding month
		House & Garden	25th of preceding month
		House Beautiful	20th of preceding month

ing, demonstrates confidence in what we have done to date.

So much for our first year's activities. What sort of job are we planning to do for the second year? First, we intend to abide by the specifications defined by the Association's Executive Board. Equally important, we intend to live within our budget, as we did the first year. We are very much in the position of the tailor who has a certain amount of cloth with which to fashion his garment. Our cloth is in the form of funds subscribed for the campaign. We estimate that these funds will total the same for the year ahead as they did for the first year's work, approximately, \$458,000. Of this amount, \$30,000 has been allocated for industrial and commercial gas advertising, and \$400,000 for the domestic gas campaign. The balance has been earmarked for promotional and incidental expenses, and as protection against possible space rate increases by magazines.

#### *Second Year's Program*

Included in the budget for domestic gas advertising is \$20,000 for continued publicity work. The purpose of this activity is to keep news items, articles and pictures describing modern gas appliances appearing continuously in newspapers and magazines throughout the country. This program will be carried on without any basic change of plans. It supplements the national advertising and makes our whole program more effective.

We enter our second year with 717 participating companies as against 694 for the first year. Our contributing companies have in active service on their lines 11,525,863 meters, an increase of 156,449 meters over last year. Companies supporting the program have in operation 70.33% of all the gas meters in service in the United States. You will recall that President Russell headed up the Committee to solicit funds to initiate the program. He is still actively at work on that assignment and we are hopeful that before the first advertisements of our new campaign appear in publications early this Fall, we will be able to report a considerable increase in meters over last year's totals.

What magazines will be used the second year? Our problem, as you

may suspect, is to secure the maximum circulation coverage for our appropriation. We must also make sure that this circulation is in territory served by the gas industry.

Following is a listing of consumer, trade and professional magazines, together with circulation figures, that have been selected to carry our advertising messages for 1937-38.

#### CONSUMER MAGAZINES GENERAL WEEKLIES

	<i>Circulation</i>
Saturday Evening Post	3,000,000
Life	1,500,000

#### WOMEN'S MAGAZINES

Good Housekeeping	2,200,000
Woman's Home Companion	3,000,000
McCall's	2,700,000
Pictorial Review	2,850,000

#### HOME SERVICE MAGAZINES

American Home	1,200,000
Better Homes & Gardens	1,500,000
House & Garden	160,000
House Beautiful	150,000
	18,260,000

#### TRADE & PROFESSIONAL MAGAZINES ARCHITECTURAL

	<i>Circulation</i>
Architectural Forum	32,238

#### BUILDING

American Builder & Building Age	61,440
---------------------------------	--------

#### PLUMBING

Domestic Engineering	19,361
Plumbing & Heating Trade Journal	17,695

#### DEALER MERCHANDISING

Gas Appliance Merchandising	8,000
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#### HOME ECONOMICS

Journal of Home Economics	7,760
Practical Home Economics	8,660
What's New in Home Economics	19,250
	174,404

Immediately the question will arise, "How does the circulation of this list compare with that of last year?" Below is reproduced a table which tells the story clearly. Kindly note that magazines to be used during the coming year will give us an increased circulation of 4,671,000 copies. Far more striking, however, is the increase in the number of color messages that will appear this year as against last year. This increase amounts to 21,777,000 messages. In this connection, we are proud to report that this substantial additional coverage is obtained by allocating the same amount for purchase of advertising space during 1937-38 as was spent for the same purpose a year previous.

#### COMPARISON BETWEEN 1936-37 CAMPAIGN AND THE 1937-38 CAMPAIGN (Consumer Magazines Only)

	1936-37 <i>Schedule</i>	1937-38 <i>Schedule</i>
Number of magazines	6	10
Number of insertions	34	53
Total circulation	13,589,000	18,260,000
Total color messages in campaign	78,523,000	100,300,000

Generally speaking the copy theme for the 1937-38 campaign will be much the same as that of last year. The advertisements appearing in the several women's magazines will be devoted entirely to gas for cooking and again we will feature current models of modern gas ranges. However, instead of tying up the copy with pictures of food subjects as was done last year, the advertising message will deal more directly with the latest features of gas ranges which make cooking easier and insure better cooking results. In this connection we shall illustrate and describe the new speed broilers, oven heat control, improved top burners, etc. The headlines will deal with gas and gas ranges and will be accompanied by eye-compelling illustrations of situations in which the housewife frequently finds herself. Altogether this copy will be far more pointed than last year and will aim more directly to interest the readers not only in gas as a superior cooking fuel, but also in the most modern types of fully automatic gas ranges.

In the *Saturday Evening Post* eight insertions have been scheduled over the next twelve months, and four of these will carry the women's advertisements as described above. For the other four insertions we have developed a new type of advertisement which will feature the "4 Big Jobs" that gas does in the home, i.e., cooking, refrigeration, water heating and house heating. It will be remembered that in the last campaign refrigeration, water heating and house heating in addition to cooking were mentioned briefly in the *Post* advertisements, but in the new series we propose to give these latter three uses more space and more display. Instead of just mentioning them briefly we intend to show appropriate illustrations of each one, although the main illustration will be on the gas range. Each of these four advertisements will refer in the headline to the fact that gas and gas only makes the "4 Big Jobs" completely automatic.



In the *American Home*, *Better Homes & Gardens*, *House Beautiful*, etc., whose editorial matter deals to a large extent with home equipment and home management, we propose to use a combination of the advertisements scheduled for the women's magazines and those scheduled for the *Saturday Evening Post*. In other words, a part of our advertising will deal entirely with gas for cooking and the balance will be on the "4 Big Jobs." In this way we shall reach those readers who are interested in new house heating, refrigeration and water-heating equipment.

This additional circulation has been made possible by using two color instead of four color advertisements. The savings effected by this procedure enabled us to increase the spread of circulation noted above—a step heartily endorsed by the Committee. The use of two colors in the current series is in line with the new copy approaches adopted by the Committee. Furthermore, some of the most effective advertising done today is in two colors, and the trend is distinctly in that direction in view of increasing space, art and mechanical costs.

All of the advertisements appearing in the new campaign will play up the slogan "Gas Is Your Quick, Clean, Economical Servant," which has been substituted for last year's slogan "Modernize Your Home With Gas." Also, every advertisement will feature a reproduction of the Laboratory Approval Seal and will explain its significance.

The booklet to be offered in the campaign is to be known as "The World's Easiest-To-Keep House," and is being written by Mrs. Constance Holland, a well-known writer on the subject of home economics, and at one time household editor of *Delineator Magazine*. This booklet is essentially a guide to the purchase of gas appliances and covers the subjects of cooking, refrigeration, water heating and house heating. It will deal also at some length with the A. G. A. Laboratory and the important part it plays in the testing and certification of gas appliances.

The booklet is written in an intimate, informal style, as one woman



General weeklies and women's and home service magazines which will carry the 1937-38 advertising

talking to another. While pointing out the various features of the appliances described, it will be entirely non-technical. The booklet will be profusely illustrated and will, we believe, be a distinct contribution to the second year's campaign.

We are aware of the fact that without proper tie-in material especially designed for local gas company use, our program cannot become effective at its point of origin and that means the local gas companies themselves. Somehow, the impression has got around that companies not participating financially in the campaign are automatically ruled out from ordering and using any of the tie-in material we make available as part of the campaign. This is not the case. The tie-in material is offered to the entire industry, without restriction of any sort, and with the hope

that every company will use it or, in its place, use material of its own origin utilizing the themes and slogans of the national program.

In developing a schedule of material for the second year we have included a wide assortment of items that we hope will cover requirements of companies of all sizes. The list which follows gives a good idea of what we will offer. Other material is sure to be added to this list as the campaign progresses. Companies will be advised through the medium of special bulletins of each item in the list below, when the item is ready for use, and prices and other information in connection with it. Also, samples of any special material developed by companies will be supplied to our mailing list of some 1,600 executives, sales managers, and advertising men.

### 1. Reprints of Advertisements

Reprints of two-color ads appearing in national publications. Delivery of first ad about July 10.

### 2. 4-Page Promotional Letter

To be distributed by companies to employees, dealers and architects to secure their interest and cooperation. Delivery about July 15.

### 3. Color Blow-ups of Advertisements

A series of 9-color blow-ups of the national magazine advertisements—size 24" x 30"—furnished with or without chromium frame's. Delivery of first blow-up about July 15.

### 4. Blotter Bill Inserts

A series of four small attractive blotters tying up with the first four magazine advertisements. Suitable for bill inserts or for use as a handout at the cashier's window. Delivery about August 25.

### 5. Newspaper Mats

Black and white adaptation of the national ads furnished in 5, 3, 2 and 1 column sizes in mat form. Delivery about August 1.

### 6. Electros

Electros of standard units used in the national ads available in several sizes. Delivery about August 5.

### 7. 24-Sheet Poster and Car Card

A striking color poster and car card tied up closely with the first magazine advertisement. Delivery about September 10.

### 8. Reprints of Ads in Chromium Frame

Reprints of all of the national ads. Included is an attractively illuminated chromium frame for displaying reprints in window or store interiors. Delivery of first reprint about Sept. 10.

### 9. Decalcomania

A colorful decalcomania carrying the copy theme of the national ads. Delivery about September 20.

### 10. Range Price Ticket

An attractive colorful price ticket closely tied up with the campaign. Delivery about September 10.

### 11. Planning the World's Easiest-To-Keep House

The give-away booklet offered in the campaign. Delivery early in August.

### 12. Window Display Material

Backgrounds, window cards, posters, etc., all keyed to the national advertising. Delivery about October 1.

### 13. Poston Display

An attractive 11" x 13 1/4" poster that can be used on the door panel of trucks, the sides of ranges, water heaters, gas furnaces, store interiors, window backgrounds, etc. Printed on a special patented material that adheres easily without damage to any smooth surface. Delivery about October 1.

### 14. Photographs

Glossy prints of photographs used in the national ads. Delivery in September.

### 15. Movie Trailers

40 to 60-second movie trailers tied up with national ads for use in local theaters. Delivery about September 10.

### 16. Poston Handy Hooks

This set of three handy hooks is to be handed out at the cashier's window. Designed for use on kitchen or pantry walls to hold pots, pans, dish pads and other kitchen utensils. They are small hooks fastened to a special material that adheres firmly to any smooth surface. Interestingly designed and printed in two colors with a brief advertising message about gas. Delivery about September 15.

### 17. Direct Mail Campaign

An effective three-piece direct mail campaign that has an unusually strong tie-up with the campaign. On the center spread of each piece one of the national ads is reproduced with the name and address of the local gas company. Delivery about November 1.

### 18. Food-Fotos

A low cost 4-page pictorial gravure tabloid that offers complete menu suggestions together with necessary recipes. Profusely illustrated with beautiful food photographs. The back page carries one of the national ads with the local gas company name and address imprinted as a part of the ad. Delivery about December 1.

### 19. Depth-O-Graph Display

The popular photographic third dimensional illuminated display that was offered during the latter part of the 1936-37 campaign. New plates and new copy to fit the present frame will be made available to gas companies who used the present display. Those who did not use the Depth-o-graph will again have an opportunity to buy the display complete with frame and shadow box. Delivery October 20.

### 20. Poston Plaque

Another Poston item—the special new material that adheres quickly and easily to any smooth surface. This is an eight-inch circle carrying the campaign slogan—attractively printed in two colors. Can be used on trucks, doors, window backgrounds, walls, or in the display room on the sides of stoves, furnaces, water heaters, refrigerators, etc. Delivery about December 15.

I will not at this time comment on other features of the domestic program except to say that we intend to repeat our series of regional meetings and intensify our efforts to secure local company tie-in with the national drive.

### Industrial and Commercial Gas Advertising

A brief word or two concerning plans for the industrial and commercial gas advertising for 1937-38. Magazines selected reach the following industries—metals, foods, ceramics, hotels and

restaurants and beauty shops. These are the same fields reached by the first year's advertising.

Publication	No. of Pages	Circulation
<i>Iron Age</i>	13	15,014
<i>Steel</i>	13	11,348
<i>Metal Progress</i>	12	8,777
<i>Metals &amp; Alloys</i>	12	5,361
<i>Industrial Heating</i>	12	9,644
<i>Heat Treating &amp; Forging</i>	6	4,043
<i>Bakers' Helper</i>	13	9,750
<i>Bakers' Weekly</i>	13	14,062
<i>Food Industries</i>	12	10,000
<i>Ceramic Industry</i>	12	2,333
<i>American Restaurant</i>	12	14,813
<i>Hotel Management</i>	12	8,384
<i>American Hairdresser</i>	6	28,061
<i>Modern Beauty Shop</i>	6	39,804
		181,394

The basic idea of the industrial and commercial gas advertising will be to make the prospect realize more definitely than ever before that the gas industry is alert, progressive and modern; that through its research activities it has developed important new information about gas and gas utilization; that out of this new knowledge of gas has come new and more efficient equipment; and that this new information and new equipment not only make gas available for many industrial processes on a more economical basis than ever before, but also make possible definite improvements in quality of product and substantial reductions in cost.

In conclusion, let me reiterate: If you, who are subscribing the money which makes this advertising campaign possible, do not cooperate in every respect with our program, then you are the losers. By "cooperation" I mean constructive suggestions and criticism through the proper channels, which means through your regional representative on the national committee; full attendance of yourselves and staff at all regional meetings; complete use of the tie-in material in all its phases except where, due to local conditions, certain phases cannot be utilized.

Our budget of less than one-half million dollars is very small compared to the reported budget of the electrical industry last year of nine million dollars.

Apparently it is the consensus of opinion that we have gone some place during the last year, and by and with your whole-hearted support, we are going to go much further during the coming year.

# Accident Prevention Work Is Good Business

By HERMAN RUSSELL

President, Rochester Gas and Electric Corporation and President, American Gas Association

**A**CCIDENT prevention work, like so many other successful social developments, had its beginning in the purely altruistic desire to better the lot of fellow human beings.

It was about thirty years ago that the movement seriously got under way. At that time, and for several years subsequently, there was relatively little interest in Workmen's Compensation Laws. The employee injured in the course of duty did have recourse to law under the various Employers' Liability Acts but to recover it was necessary for him to establish negligence on the part of the employer. Obviously this was an unsatisfactory condition for both the employer and employee and many companies such as the one with which I am connected furnished medical attention to the injured employee and paid his wages during the period of disability.

## *Safety Movement*

Such practice was viewed askance in certain quarters, and, in some instances, openly criticized, but it was a policy, although costly, that demonstrated that industry had a vital interest in the welfare of its employees beyond any thought of financial return. It was natural under these conditions that the Safety Movement took the form of a typical evangelistic campaign. It had a very definite effect and by the time Workmen's Compensation Laws were enacted the "Safety Committee" was regarded both by management and men as a very worthwhile asset to the organization, in spite of the fact that it cost considerable money and was unable to definitely justify itself on the balance sheet.

With the enactment of the Compensation Laws and the setting up of insurance schedules and rates in New York State, it was possible for us to accurately measure the direct financial return of accident prevention work.

It is my practice to base my operating policy upon the balance sheet in so far as it is possible, and in accident prevention work the balance sheet furnishes a reliable and accurate guide to the actual return on the money invested. There are many intangible returns such as improved employee morale, greater efficiency, better public relations, etc., which, though hard to evaluate, are appraised by competent authorities at

Herewith is presented the first of a series of Safety Messages by prominent executives in the gas industry, sponsored by the Accident Prevention Committee.

from three to five times the actual financial returns secured.

The "yardstick" developed out of the balance sheet is in brief a comparison of the actual cost of Workmen's Compensation insurance with the cost computed at the manual rates. The manual rates are modified in the case of each individual company by a factor known as the experience rating credit or debit. This experience rating factor takes into consideration the previous four-year accident record of the individual utility and by applying it to the manual rate classifications the actual rate charged is either decreased or increased in accordance with the actual accident costs of the company over the previous four-year period. The experience rating plan is applied each year and is a most accurate indicator in dollars and cents of the monetary value of safety work. The difference between the cost of compensation insurance at the manual rate and at the rate actually paid, will, provided the latter is less, show

the gross monetary return on the cost of safety work. Deducting the cost of safety work from the gross return gives of course the net return, and the ratio of net return to safety cost is the "yardstick" which tells the story.

In the Rochester Gas and Electric Corporation for the period 1919 to 1936 inclusive, this ratio is 5.01 which indicates an average annual return of \$5.01 for every dollar spent in accident prevention work. It is interesting to note that these ratios for the past four years have been as follows: 1933, \$5.15; 1934, \$6.26; 1935, \$5.69; 1936, \$8.02. These results have been made possible because for a long period of time the company management and the organization have been sold on the importance of safety work as a regular part of operation. Since there is a cumulative effect in safety promotion work, comparable results could hardly be expected, in general, with a new safety set up.

Further there is of course an additional operating cost for safeguards and safe construction which is naturally not charged to safety promotion.

## *Appraising Safety Work*

In appraising safety work, its methods, results and costs, the "law of average" always applies. In any one year results may be good or bad. Long time results are what count, and to secure them long time costs are required. A safety program will not run very long on momentum. Further there seems to be a practical "irreducible minimum" beyond which further reduction in accident cost is, if not impossible, at least impractical. We are continuously striving to locate this point.

Ways and means of further reducing accident costs are properly a subject for continuous consideration as operating problems. In this field

(Continued on page 288)



# Association's Nominating Committee Reports for 1937-38



N. C. McGowen

*To Members of the American Gas Association:*

**I**N compliance with Section 2 of Article II of the By-Laws of the American Gas Association, announcement is hereby made to the membership of the following report of the General Nominating Committee which will be presented to the annual convention in Cleveland, Ohio, in September, 1937:

*For President*—N. C. McGowen, president, United Gas Public Service Co., Shreveport, La.

*For First Vice-President*—Conrad N. Lauer, president, The Philadelphia Gas Works Co., Philadelphia, Pa.

*For Second Vice-President*—Walter C. Beckjord, vice-president, Columbia Gas and Electric Corp., New York.

*For Treasurer*—J. F. Rooney, assistant to executive vice-president, Consolidated Edison Co. of New York, N. Y.

*For Directors*—2-year terms: F. H. Adams, vice-president, Surface Combustion Corp., Toledo, Ohio.

Charles M. Cohn, vice-president, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.

J. S. DeHart, Jr., president, Isbell-Porter Co., Newark, N. J.

L. B. Denning, president, Lone Star Gas Co., Dallas, Texas.

C. E. Gallagher, president, The East Ohio Gas Co., Cleveland, Ohio.

George S. Hawley, president, Bridgeport Gas Light Co., Bridgeport, Conn.

B. J. Mullaney, vice-president, The Peoples Gas Light and Coke Co., Chicago, Ill.

Otto Snyder, president, New York Power & Light Co., Albany, New York.

T. J. Strickler, vice-president, Kansas City Gas Co., Kansas City, Mo.



Conrad N. Lauer

In line with the practice of the Nominating Committees for the past four years your Committee for 1937 voted unanimously not to name a candidate for the Third Vice-President.



Walter C. Beckjord

Respectfully submitted,

D. D. Barnum, president, Boston Consolidated Gas Co., Boston, Mass., *chairman*.

H. C. Cooper, president, Hope Natural Gas Co., Pittsburgh, Pa.

Frank L. Chase, vice-president, Lone Star Gas Co., Dallas, Texas.

Floyd C. Brown, vice-president, Natural Gas Pipe Line Co. of America, Chicago, Ill.

William Moeller, Jr., vice-president,



J. F. Rooney

Southern California Gas Co., Los Angeles, Calif.

Donald McDonald, secretary, American Meter Co., Inc., New York, N. Y.

*General Nominating Committee*

The following members have been nominated by section nominating committees to serve as section officers for the next Association year:

*Natural Gas Department:* For Chairman—Robert W. Hendee, Colorado Interstate Gas Co., Colorado Springs, Colo. For Vice-Chairman—Thomas R. Weymouth, Columbia Gas & Electric Corp., Pittsburgh, Pa. Nominating Committee: William Moeller, Jr., Southern California Gas Co., Los Angeles, Calif., *chairman*; Frank L. Chase, Lone Star Gas Company, Dallas, Texas; John B. Tonkin, The Peoples Natural Gas Co., Pittsburgh, Pa.

*Accounting Section:* For Chairman—D. H. Mitchell, vice-president and general manager, Northern Indiana Public Service Co., Hammond, Ind. For Vice-Chairman—H. A. Ehrmann, Consolidated Edison Co. of N. Y., New York, N. Y. Nominating Committee: F. L. Griffith, The Peoples Gas Light & Coke Co., Chicago, Ill., *chairman*; A. S. Corson, The United Gas Improvement Co., Philadelphia, Pa.; E. B. Nutt, Standard Oil Co. of New Jersey, New York, N. Y.; J. M. Roberts, The Peoples Gas Light & Coke Co., Chicago, Ill.; J. I. Blanchfield, The Brooklyn Union Gas Co., Brooklyn, N. Y.

*Commercial Section:* For Chairman—Hugh Cuthrell, vice-president, The Brooklyn Union Gas Co., Brooklyn, N. Y. For Vice-Chairman—F. X. Mettenet, vice-president, The Peoples Gas Light & Coke Co., Chicago, Ill. Nominating Committee: Charles E. Bennett, Manufacturers Light & Heat Co., Pittsburgh, Pa., *chairman*; F. M. Rosenkrans, Gas Service Co., Kansas City, Mo.; N. T. Sellman, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.; Wal-



ter C. Beckjord, Columbia Gas & Electric Corp., Pittsburgh, Pa.

**Industrial Gas Section:** For Chairman—Hale A. Clark, Detroit City Gas Co., Detroit, Mich. For Vice-Chairman—Frank H. Trembly, Jr., The Philadelphia Gas Works Co., Philadelphia, Pa. Nominating Committee: C. W. Gale, Knoxville Gas Co., Knoxville, Tenn., *chairman*; J. F. Quinn, The Brooklyn Union Gas Co., Brooklyn, N. Y.; D. W. Chapman, The Peoples Gas Light & Coke Co., Chicago, Ill.

**Manufacturers' Section:** For Chairman—Merrill N. Davis, vice-president, S. R. Dresser Manufacturing Company, Bradford, Pa.

**Publicity and Advertising Committee:** For Chairman—Henry Obermeyer, assistant vice-president, Consolidated Edison Co. of N. Y., Inc., New York, N. Y. Nominating Committee: J. R. Pershall, Public Service Co. of Northern Illinois, Chicago, Ill., *chairman*; Kenneth Magers, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.

**Technical Section:** For Chairman—J. V. Postles, assistant to vice-president, The Philadelphia Gas Works

## Nominees for Section Officers



Robert W. Hendee



D. H. Mitchell



Hugh Cutbrell



Hale A. Clark



Merrill N. Davis



Henry Obermeyer



J. V. Postles

Co., Philadelphia, Pa. For Vice-Chairman—F. M. Goodwin, vice-president, Boston Consolidated Gas Co., Boston, Mass. Nominating Committee: F. A. Lydecker, Public Serv-

ice Electric & Gas Co., Newark, N. J., *chairman*; C. A. Harrison, Toledo Edison Co., Toledo, Ohio; O. S. Hagerman, American Light & Traction Co., Chicago, Ill.

## Named for A. G. A. Directorate



F. H. Adams



Charles M. Cohn



J. S. DeHart



L. B. Denning



C. E. Gallagher



George S. Hawley



B. J. Mullaney



Otto Snyder



T. J. Strickler

# Building for Kitchen Efficiency



have accomplished our purpose of helpfulness.

In offering model kitchens we have preserved the practical point of view of the builder in reference to cost and other factors. One of our staff members possessing extensive experience in the operative building field has been of valuable assistance in designing cabinets and other auxiliary furnishings especially with regard to the practicability of installation. Another, with a background of equipment engineering, represents the point of view of

*Left—Everett J. Boothby, vice-president and general manager of the Washington Gas Light Company, is being congratulated by Lewis T. Breuninger, chairman of the Home Building Committee of the Washington Real Estate Board. The unit in the background is a Monel Metal 7-foot assembly*

**By B. K. SLAUGHTER**

Washington Gas Light Company

**I**TS crusade in behalf of standard equipment units for compact kitchens brings the Washington Gas Light Company again before the building public of this city as a champion of better construction methods and materials for new homes and apartments.

Through its pioneer efforts in the local field of automatic house heating, this company has become identified with "building for fuel conservation." Now it becomes allied with "building for kitchen efficiency."

This is conducive to prestige and public confidence, which should go far toward insuring our domestic cooking load.

The future of our entire domestic business undoubtedly is linked with the new construction industry; that is the reason for the Washington Gas Light Company's broad promotional program in that field. The kitchen planning phase of that program has necessitated close contact with architects, realtors, contractors and the var-



*Napanee unit, 103 inches, featuring retractable table under the drainboard*

ious building supply sources. It is fair to assume that those groups have become more gas-minded as a result. Their response to our efforts has been gratifying. Such efforts have been in the nature of concrete helps to builders and others in meeting their kitchen problems. The degree of cooperation extended by those groups indicates we

the manufacturer, enabling us to visualize the problem of production when preparing specifications for coordinated equipment units.

In an effort to be of service to the building interests, this department recognizes the need for something more than theory—more than the spoken and printed word. Accordingly, we



*Murphy unit featuring under-counter refrigerator, cabinet of own make, with Electrolux unit. All cabinets are metal with porcelain finish*

have reduced the best thought available to a practical demonstration of what constitutes sound kitchen planning. Six complete units, embodying acceptable features for the small kitchen, have been erected in a special display room set aside for that purpose. The several examples produced offer a fair variety of kitchen treatment, in all of which an attempt has been made to combine good appearance with the utmost in utility. We have realized the importance of planning and presenting the kitchen in its entirety, with special thought to the limited space usually allotted that room in apartments and small homes. The ready cooperation of manufacturers and supply houses dealing in other than gas-consuming equipment has made this possible.

Early efforts of this company to raise standards in the small kitchen resulted last year in the creation of a single model kitchen, exemplifying good design, manufacture and coordination. That first unit, embracing a straight line arrangement of essential equipment, emphasized minimum dimen-

sions. Units of the smallest practicable proportions were aligned in a wall space of seven feet. It was considered unwise to shorten this space without resort to an under-counter refrigerator, a device which many consider inexpedient.

Heretofore it has been common practice to equip the numerous apartments of Washington with "stripped" ranges, solely because of a saving in price. Apartment dwellers were thus denied the advantages of a fully insulated range with oven heat control and automatic top burner lighting. This was recognized as a serious obstacle in our educational campaign on advantages of modern gas cookery. Already re-

and assembled for display. It was our desire to provide as widely different types as possible, thereby demonstrating the flexibility of design possible with the use of modern gas equipment. We have also been aware that builders, striving for originality, are thus afforded opportunity for individual expression.

As was the first coordinated kitchen model introduced by this department, subsequent ones conform to carefully arrived at design and installation standards. Dimensions of appliances are consistent with those of stock models, thus facilitating replacement when necessary; for the same reason rigid or bolted assembly has been avoided. Sufficient clearances have been allowed throughout; joints are all flush; adequate provisions for air circulation exist for both range and refrigerator.

Treatment of cabinets illustrate proper spacing in relation to those units.

In keeping with its non-selling policy, the Promotional Division of the Washington Gas Light Company refrains from soliciting orders for the coordinated units or any of the component equipment. Prospects are

(Continued on page 288)



*Oxford compact unit with fully equipped Oriole range, standard sink, H-410 Electrolux and wood cabinets*

sults of our efforts are indicated by an increase in the use of fully equipped ranges for apartments as well as other rental properties. We believe this illustrates the advantage of positive, persuasive educational methods in contrast to negative, prohibitory measures.

Our initial offering of a model coordinated gas kitchen was hailed with enthusiasm. On the strength of the generous reception accorded it, we felt justified in extending our effort. One by one, new kitchens were designed

*Parsons Pullman type unit, 70 inches in width, with Monel Metal sink, metal cabinets and H-410 Electrolux*



# All Roads Lead to Cleveland

## September 27-October 1

**T**HOUSANDS of gas men from all parts of the country, representing all phases of the industry, are expected to converge on Cleveland, Ohio, for the nineteenth annual convention of the American Gas Association which takes place September 27-October 1. A program of wide appeal is rapidly being completed which will reflect the growing attention to competitive problems and the economics of the gas industry.

Particular interest centers this year around the A. G. A. Testing Laboratory since this is the first time in the history of the Association that the convention has been held in Cleveland, thus offering an unexcelled opportunity to visiting gas men to inspect the Laboratory. The main laboratory, located at 1032 East 62nd Street, represents an investment of thousands of dollars by the gas industry and includes apparatus that is not duplicated anywhere in the United States, or in fact, the world.

The broad program of appliance testing and research which has been carried on successfully for years has been recognized both in this country and abroad as one of the most unique

examples of self-regulation ever devoted to customer protection and satisfaction. This program has been instrumental in increasing the safety, economy and reliability of gas appliances. A full morning during the convention will be devoted to a visit to the Laboratory and special buses have been arranged for the convenience of those who want to take advantage of this opportunity. Arrangements have also been made for transportation to and from the Laboratory at other periods. As an added attraction it is planned to have an exhibit showing a number of unique applications of gas for industrial and commercial purposes.

A city of diversified industry, Cleveland offers many attractions. It is a natural transportation center, owing much of its development to its convenient location to the rich Lake Superior iron ore region and the coal and limestone fields of Pennsylvania and Ohio. Its 3,000

plants normally employ 140,000 wage earners. At least two-thirds of the nation's industries are represented there. Of special interest is the fact that it is one of the major centers for gas appliance manufacturers and, in fact, is said to be the largest gas appliance center from a dollars and cents standpoint in the United States.

Various sessions of the convention have been divided between the Statler and Cleveland Hotels. General sessions and meetings of the Commercial and Industrial Gas Sections will be held at the Statler Hotel. However, the President's Dinner and other executive functions, as well as the meetings of the Accounting and Technical Sections and the Natural Gas Department, will take place at the Cleveland Hotel.

Three general sessions have been arranged for the convention, one of which will be held Wednesday evening combining business and entertainment functions. As in the past these meetings will be devoted to problems of vital interest to the whole industry. The program will include outstanding speakers carefully selected from other



*Cleveland's public square—hub of activities in that thriving city. On the right is the Cleveland Hotel where some of the convention sessions will be held*





*A. G. A. Testing Laboratory at Cleveland*

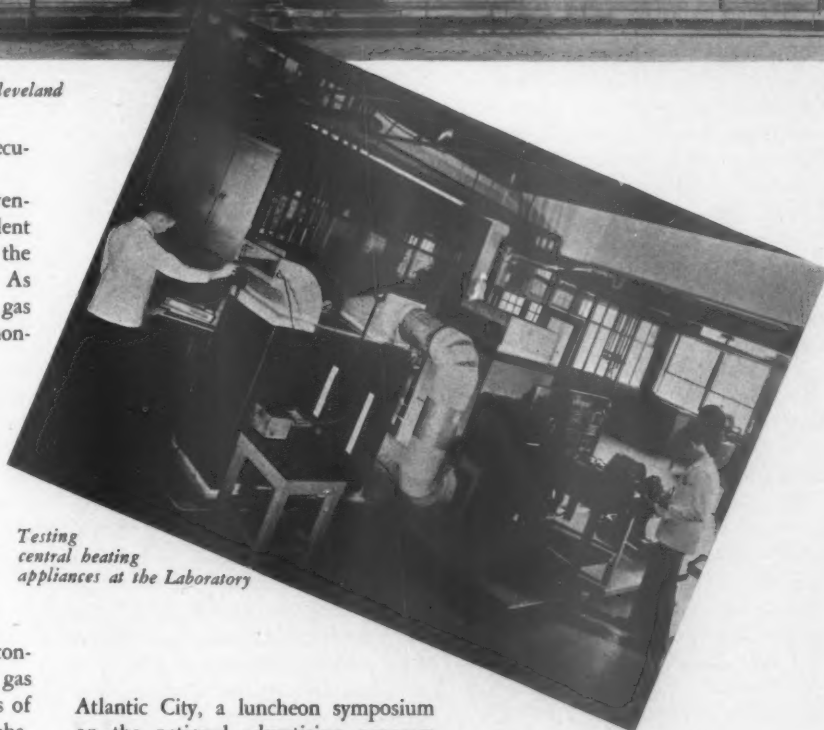
industries as well as prominent executives in the gas industry.

The keynote of the entire convention is expected to be set by President Herman Russell in his address at the first general session, September 28. As a firm believer in the future of the gas industry and as one who has demonstrated its economic soundness in a series of forceful addresses in various parts of the country in recent months, President Russell's remarks will undoubtedly be a high spot on the convention program.

An important part of the general sessions program will be devoted to a discussion of "The Home of Tomorrow." A qualified authority on this subject has consented to present his views to the gas industry. In view of the timeliness of this subject, as well as the new emphasis it has been given in all gas company activities, it is expected to be a most worthwhile part of the program.

With the national advertising campaign going into the second year, any new angles on "Telling the Story of Gas Nationally" will undoubtedly find a receptive audience. This topic has been tentatively selected for one of the general sessions and will be presented by a recognized authority. Other topics which are expected to be on the final general sessions program include addresses dealing with developments in competition, customer relations, and emergency public service. An outstanding national figure will be on tap to discuss "Business Prospects."

Again, as at the last convention at



*Testing central heating appliances at the Laboratory*

Atlantic City, a luncheon symposium on the national advertising program will be held. Short addresses will be made by T. J. Strickler, chairman of the Committee to Conduct National Advertising, and by two representatives of participating gas companies who have some interesting developments to report in connection with the use of tie-in material. Thereafter the meeting will be thrown open for discussion. The symposium will be held at the Cleveland Hotel on Thursday of convention week.

As at previous A. G. A. conventions, entertainment features of high caliber are being arranged by a special committee. The President's Reception will be held Tuesday evening in the ballroom of the Statler Hotel. A Ladies' Luncheon and Bridge, including a style

show, has been arranged for Wednesday. Other special functions will be announced as soon as final arrangements are completed.

The sectional and departmental programs get under way Monday morning, September 27, with the meeting of the Natural Gas Department. With no other meetings held on this day, a large attendance is expected at the morning and afternoon sessions. Following the record natural gas meeting in Kansas City in May, this follow-up meeting will be devoted to various subjects which were not completely covered at that time.

A bang-up program for the accountants has been prepared for Tuesday

and Thursday afternoons. In addition there will be the popular Accounting Section Luncheon Conferences on Wednesday. These conferences, where a wide variety of subjects is discussed informally with no record taken of the proceedings, have been enthusiastically endorsed by the gas industry.

#### *Accounting Sessions*

The first accounting session will open with the Address of the Chairman, Herbert E. Cliff, Public Service Electric & Gas Co., Newark, N. J. Following election of officers and the report of the Luncheon Conference Committee, G. B. Webber, chairman, the report of the Customer Relations Committee will be presented by J. Gordon Ross, chairman, Rochester Gas & Electric Corporation, Rochester, N. Y. Additional committee reports at this session include: Uniform Classification of Accounts, F. L. Griffith, chairman, The Peoples Gas Light & Coke Co., Chicago; General Accounting, H. L. Gruhn, chairman, Consolidated Gas Electric Light & Power Co., Baltimore; Exhibit, P. J. Sweeney, chairman, The Peoples Gas Light & Coke Company.

An innovation on this year's program will be a paper on "Health Promotion Plans" by Dr. William J. McConnell, assistant medical director, Metropolitan Life Insurance Co., New York. This will be presented at the Thursday session along with the following committee reports: Accounting Machines Committee, G. F. Trexler, chairman, Utility Accountants and Tax Consultants, New York; Office Management, J. J. Natale, chairman, Philadelphia Electric Company, Philadelphia; Customer Accounting, W. E. Scott, chairman, Boston Consolidated Gas Company. H. C. Davidson, Consolidated Edison Co. of New York, will make the closing remarks.

With three afternoon sessions, the Commercial Section is rapidly completing a program of sales topics which should be a major convention attraction. There is no part of the industry today which is receiving greater attention than sales and this fact will be abundantly apparent to those who attend the convention and particularly the meetings devoted exclusively to sales problems. In addition to reports

of important committees, there will be a number of outstanding papers presented by men who have achieved high places in the sales field. A feature of the meeting will be the award of prizes to winners of the national refrigeration sales contest now in progress.

The Home Service Department will hold a meeting Tuesday afternoon which will emphasize the important part home service plays in the sales program of the gas industry. The Home Service Breakfast will take place Wednesday morning at the Statler Hotel.

#### *Industrial Gas Program*

"Gas as the Ultimate Industrial Fuel" will be the theme of the Industrial Gas Section meetings at the convention. This topic will be discussed by a prominent gas company executive at the Industrial Gas Club Luncheon, Tuesday, at the Hotel Statler. There will also be three full afternoon sessions devoted to industrial gas problems. In addition, the Industrial Gas Section will be represented on both the general sessions and Natural Gas Department programs.

With Ralph L. Manier, chairman of the Industrial Gas Section, presiding, the first afternoon meeting of the section will begin Tuesday afternoon. Chairman Manier will open the session with an address on "Why Industrial and Commercial Gas Sales Are Increasing." Other subjects tentatively selected for this session include: "What Industrial Gas Men Should Know

About Steel," "Industrial Department Management," and "Modern Methods of Applying Gas in Large Power Boilers."

Adopting a practice which has proved particularly successful in regional conferences, the second and third industrial gas sessions will include five-minute presentations by a number of speakers on vital commercial and industrial problems. Open discussion of each topic will follow the formal presentations. Subjects to be covered in this manner are: "Unit Heater Applications in Commercial Establishment," "Evaluation of Gas Commercial Cooking," "Developing Dealer Cooperation in Hotel and Restaurant Appliances," "Immersion Heating with Gas," "Convection Heating with Gas," and "Wholesale Baking with Gas."

#### *Technical Section Topics*

Engineers, chemists and other technical men who attend the convention will find ample valuable material presented for their consideration during the three afternoon sessions of the Technical Section. The program will consist of important reports by the Distribution, Gas Production and Chemical Committees, and the presentation of a number of papers on new developments and problems in the industry. M. I. Mix, chairman of the section, will preside and will make an opening address at the first session, Tuesday afternoon.

Walter C. Beckjord, vice-president and general manager, Columbia Gas & Electric Corp., New York, will present a paper at this session on "Gas Conditioning." Mr. Beckjord will consider gas conditioning in its broadest sense and point out the need for more research. He is expected to discuss what has been done in connection with gum, naphthalene and total sulphur removal, rehydration, dehydration, oil fogging, and other problems.

A highlight of the second session will be an illustrated talk by E. A. Munyan, Cincinnati Gas & Electric Company, on "Experiences during the Ohio River Valley Floods." Another paper tentatively selected for this session is that on "Scrubbing in the Natural Gas Industry." In this paper Pro-

(Continued on page 287)

#### **"On to Cleveland" Sales Contest**

Twenty retail gas range salesmen will be awarded all-expense trips to the nineteenth annual convention of the American Gas Association in Cleveland the week of September 27. The twenty salesmen who make the greatest number of gas range sales between the period June 1-August 31 will be the lucky winners. The contest is open to salesmen and cooperating dealers of any gas company member of the Association. The winners will be presented with Certificates of Merit during the convention at a meeting of the Commercial Section which is sponsoring the contest under the auspices of the Domestic Range Committee.

# Third International Gas Conference Held in Paris

**V**ALUABLE reports representing the knowledge and viewpoints of many countries were presented at the Third Congress of the International Gas Union which took place June 12-16 in Paris, France. The Congress was called to order at 2:30 P.M., Saturday, June 12, by International President Auguste Baril, of Paris, who drew an optimistic picture of the future of the gas industry.

Representatives from the following countries were present, the first four named contributing the largest delegations: France, Great Britain, Germany, Belgium, Czechoslovakia, Switzerland, Italy, Hungary, Sweden, Netherlands, Austria, United States, Poland, Yugoslavia, Norway.

Reports of several standing committees on which the American Gas Association is represented were presented. Alexander Forward, managing director, represented the Association at the Congress. Most of the reports concluded with a statement that each country must fill in the gaps to suit its own situation. The reports presented covered the following subjects: Coordination of Methods of Testing and Guaranteeing Gas Making Plants; Systems of Carcassing Buildings; Coordination of Methods of Testing Gas Appliances; Principles of Tariffs; Methods for the Development of the Industrial Use of Gas, Including the Hotel Industry. (Report of the Association des Gaziers Belges.)

Significant in the report of the Committee on Gas Tariffs, Fritz Escher, Zürich, Switzerland, chairman, and G. I. Vincent, Syracuse, N. Y., American Gas Association representative, is the statement: "At the present time, and after the last twenty years during which charges have been investigated throughout the world, it seems the last word has been said, and the three thousand odd tariffs in the United States do not leave to the imagination much scope for creating new ones."



*International President Auguste Baril, right, and Major Alexander Forward, managing director, American Gas Association, are shown during the international gas conference.*

Among the papers presented were:

## Germany

New Bases and Forms of Tariffs in Germany, by Dr. Hoffmann, President, Deutscher Verein von Gas-und Wasserfachmännern.

New Processes for Recovering Benzol and Their Economic Study, by Dr. K. Bunte, president, Karlsruhe Gas Institut.

## France

Atomism in Modern Physics by Louis de Broglie, Prix Nobel, Professeur a la Sorbonne.

The Evolution of Gas-Making Processes in France During the Past Twenty Years, by A. Bazille, president, Association Technique de l'Industrie du Gaz en France.

Experimental Determinations and Computation of Combustion Temperatures. Application to the Particular Case of Town Gas, by Mr. Ribaud, Professor at the Sorbonne (Chair of High Temperatures), Chef du Service des Recherches Physiques de la Société du Gaz de Paris.

## Great Britain

Technical Service for Gas Consumers, by R. N. Le Fevre, The Gas Light and Coke Company.

Electrolytic Corrosion of Gas Mains, by H. C. Widlake, The Plymouth and Stonehouse Gas Light and Coke Company.

## Italy

Materials Used for Mains, by Professor Mario Levi, president, Associazione Italiana Gas e Acqua.

## Poland

Uses of Petrol Gas in the Industry, by I. Wielizynski, Manager, Gdynia Gasworks.

## Switzerland

The Formation of Nitrogen Compounds, Compounds Contained in the Gas and the Formation of Nitrogen Oxides in the Flames, by Professor P. Schlaepfer, Director of the Section of Industrial Chemistry and Combustibles to the E.M.P.A., Zürich.

"Congressists," as all those in attendance were called, were deeply interested in the report on The Gas Industry Vocabulary, designed to standardize technical terms by ascertaining the exact words in English, French and German. It is expected that constructive criticisms will be received, and that in time an authoritative report can be issued covering all widely used languages. Thousands of terms in the report are stated in parallel words of the three languages.

After the Presidential Address by Monsieur Baril, there was presented a letter of greeting from International Vice-President Clifford E. Paige, president, The Brooklyn Union Gas Company, and a past president of the American Gas Association. It was then read in French by International Secretary Pierre Mouglin, who publicly expressed his



### *A Message to the International Gas Union*

From Vice-President Clifford E. Paige,  
President, The Brooklyn Union Gas Company

On this the third time our great industry, through its representatives, has met internationally, I am especially sorry that circumstances prevent my being with you.

Perhaps never before have so many vital problems beset the gas business. We shall, as always in the past, find a solution for them and in doing so raise our industry to new heights and new attainment.

The gas business is alive and vibrant with accomplishment. For example, the Company I have the honor to represent showed a gain of 32% in the appliances sold in the first four months of 1937 as compared with last year. In 1936 the gain was as great over 1935.

Modern gas appliances are so much more efficient than old equipment that gas sales do not gain so rapidly but the security of future business and resistance to competition is assured.

Major Forward kindly consented to convey my greetings to you, my good friends. May I wish for you health and prosperity and may I hope for a reunion with you in the not distant future.

All best wishes for the International Gas Union go to you with this message.

Cordially yours,

(signed) CLIFFORD E. PAIGE

pleasure over the opportunity to translate a message from Mr. Paige, well known to so many of the delegates.

President Le Bon of the French Gas Association welcomed the delegates.

H. Muller, of Dessau, Germany, was elected president of the International Gas Association for the next succeeding three-year term. Herr Muller, who is chairman of the German International Gas Company, is a gas engineer by profession and has had experience in all branches of the industry. He was successively in Munich, Hamburg and Dessau, and is regarded as an outstanding representative of the industry in his country.

It was decided to hold the Fourth Congress of the International Gas Union in Berlin in 1940.

Delegates visited the University of the City of Paris on the first day of the conference. That evening some attended a formal dinner given by Monsieur Le Bon.

The official banquet was held the evening of June 14 in the Gas Pavilion at the Paris International Exposition of 1937, which building was formally opened June 10.

Technical visits were arranged for the delegates, which included inspection of the following:

*The Gennevilliers Gas Works*, which cover an area of over 200 acres, the

output of which is about 1,000,000 cubic meters of gas per day, supplying 135 districts of the Paris region through a distributing system nearly 4,500 kilometers in length.

*The Laboratories of the Societe du Gaz de Paris*. The Laboratory for Testing Appliances is endowed with up-to-date equipment and is one of the three laboratories entrusted with the examination of gas-using appliances sub-

mitted for stamping. The Experimental Works and Laboratories at La Villette constitute research centers for the Societe du Gaz de Paris, and their installations, especially for studying high temperatures and calorimetric measurements, are said to be among the most modern in existence.

*The Cornillon Gas Works*, which cover an area of about 125 acres and produce about 140,000 cubic meters of gas per day.

*The Workshops of the Campagnie Pour la Fabrication des Compteurs et Materiel D'Usines a Gaz*, which employ about 4,000 men. In these workshops, delegates were able to follow the various stages of the manufacture of gas meters and, more particularly, of the greater part of the equipment employed by the gas industry in France.

### **President Russell Honored by Danish Association**

HERMAN RUSSELL, president of the American Gas Association, has been elected an honorary member of the Dansk Gasteknisk Forening, which is the national gas association in Denmark. This membership is for the term 1937-38. Announcement of the election, which took place at the annual convention, was made by H. Hansen, president.

### **Honored for Life Saving**



Jeremiah Lawler, left, day watchman of the Flushing Distribution Department, Consolidated Edison Company of New York, receiving a McCarter medal and certificate from C. C. Simpson, Jr., engineer of distribution. Mr. Lawler received this outstanding recognition for resuscitating a 24-year-old girl, a victim of carbon monoxide asphyxia, by use of the Schafer prone pressure method of resuscitation. His prompt action is credited with saving the girl's life.



# Your Association—

## What It Is *and* What It Offers

## IV

**S**OUND selling is an essential part of any business. It is no less true of the gas industry than of other industries. In order to assist the various selling organizations of the gas industry and to coordinate and make more effective their work throughout the industry, the Commercial Section of the American Gas Association was organized. This section, through its committees, has stimulated and assisted member companies in their sales and promotional activities in many ways. While many of its activities have produced intangible results, such as better employee morale, others have been of definite and measurable value.

This section has jurisdiction over all matters relating to the sale of gas and gas appliances for domestic purposes. In 1928 in conjunction with the Three-Five Year Plan of A. G. A. activities the following recommendations were directed to the Commercial Section: "That intensive efforts be made to secure cooperation within the gas industry and with all practicable enterprises and activities outside of the industry to improve selling methods, to stimulate selling efforts, to enlarge understanding and appreciation of gas service with special emphasis upon the conservation and expansion of the domestic load."

In organization, the Commercial Section is similar to other sections of the Association. The section is headed by a Chairman and is managed by him with a Vice-Chairman and a Managing Committee. There is also an Executive Policy Committee which advises the

John W. West, Jr., secretary of the Commercial Section for the past ten years, has been in the service of the American Gas Association for more than twelve years. He ranks fifth in point of service on headquarters staff. His training has been diversified and his talents are well adapted to coordinate and direct the widely varying activities of the Commercial Section.

Mr. West is a graduate of the Virginia Polytechnic Institute, Blacksburg, Virginia, where he also took post graduate work and served as an instructor for two years. He performed inspection work for the State Corporation of Virginia, followed by sales of equipment to utilities in Virginia and North Carolina. Subsequently he was in charge of



John W. West, Jr.

purchase and measurement of natural and casing head gas in Oklahoma and Texas fields for the Tidal Oil and Gas Company in Tulsa, Oklahoma. In 1920, he returned to Virginia to become chief engineer of the Commission in charge of public utilities. There he was engaged in appraisal, valuation, rate making and servicing activities in connection with telephone, water, street railway, gas and electric utilities.

His connection with the American Gas Association dates from February 1, 1925. Originally engaged in safety activities, which are still under his direction, he later became field representative of the Commercial Section. This was followed by his appointment as secretary of the section.

incoming Chairman and Vice-Chairman regarding general policies of the section prior to appointment of the next year's Managing Committee. A Nominating and Advisory Committee, composed of the several past Chairmen of the section, nominates the officers and acts in an advisory capacity during the year between the meetings of the Managing Committee. The section secretary is a permanent member of headquarters' staff and it is his duty to coordinate, direct and report the section's activities.

The work of the section has taken many directions and is best understood by a brief discussion of typical committee activities which should give a composite picture of the section's program.

Five major committees have been set up to deal specifically with problems affecting the domestic range, water heating, refrigeration, space heating, house heating and air conditioning. These committees have not only acted as clearing houses of information on progressive sales methods but have also actively pursued studies designed to foster the development and improve-

ment of gas equipment and gas service.

During 1936 the committee activities included three national sales contests to stimulate the sale of gas ranges, water heaters and refrigerators. These contests were participated in by 1,200 member companies which sent in 7,575 sales reports for classification according to contest standing and subsequent receipt of prize awards. Important places were given to local dealers in the contest plans and many

dealers participated in the prize awards as a result of their outstanding sales achievements. The object of these campaigns was to secure concerted national action on the part of the gas industry to increase the quantity and quality of gas appliance sales. Participating companies were enthusiastic concerning the results obtained and, in most cases, reported greatly increased appliance sales as a result of activity stimulated by the contests.

In the amazing expansion of gas house heating and the development of gas air conditioning which have taken place in recent years, the House Heating and Air Conditioning Committee has played an important part. This committee has devoted its efforts to the gathering of technical data underlying house heating and air conditioning requirements, the establishment of effective sales and service policies, and the adoption of special rates. It has reported at intervals on developments in the design and construction, sale and installation of all types of gas house heating and air conditioning equipment and provided much valuable information for the use of the gas indus-

try. A long list of authoritative reports covering this work will be found in the published Proceedings.

A recent contribution sponsored by the Water Heating Committee was the report of the tests conducted by Professor Wilkes at the Massachusetts Institute of Technology to ascertain the cost of domestic water heating using various fuels and types of equipment. These tests, which were recommended by the 1934 committee, disclosed very interesting and favorable facts on gas water heating. Many companies have utilized this material and continue to find it exceedingly effective in dealing with water heating prospects.

One of the principal activities of the Space Heating Committee has been the correlation of information on the market for space heating and the various types of equipment available for this field. It has also prepared suggested campaign activities along lines which a number of member companies have successfully used in recent years.

While progress studies of major load building appliances and investigations into marketing of new types of appliances form a large part of the work of the Commercial Section, its activities are by no means confined to these fields of endeavor.

#### *Sales Conferences*

Annual regional sales conferences are held in five or more sections of the country at which progressive sales executives and sales managers describe in detail methods found most successful in their territory, and outline the results achieved. The success which these conferences have met and the value attached to them by those who attend have made them an outstanding activity of the Association. Total attendance at these conferences averages about 1,400 annually.

An important and active committee has devoted its attention to the field of home modernization. When first organized this committee assisted in advancing the sale of gas appliances and gas service through home modernization activities of member companies, both in connection with the Better Housing program of the Federal Housing Administration and the work done by independent agencies. More recently the committee conducted a survey of kitchen planning activities of

gas companies and rendered valuable service in planning and devising means for operation of kitchen planning and home modernization bureaus.

This committee has also fostered the development of model kitchens and basements which have been instrumental in selling the modernity and convenience of gas equipment. Through cooperation with advertisers and publishers, articles and subjects concerning kitchen planning have been directed to architects. The latest work supervised by this committee has been the issuance of a new and revised third edition of "Modern Kitchens and Basements—A Handbook for Design and Construction." This handbook has been distributed widely and has proved a helpful and authoritative guide to kitchen and basement planning activities.

#### *Building Trade Studies*

In the building field, the section has been active in other ways to promote the use of gas service in newly constructed buildings. Through the Architects' and Builders' Service Committee, studies were made over a number of years to find ways and means of securing better cooperation from architects, engineers and builders. National studies of conditions existing in the building field were made and recommendations were passed on to the industry. The work of this committee has resulted in improving relations between the gas industry and the building trade.

Appliance financing and dealer relations problems have received the attention of qualified committees for a number of years. Last year a committee sponsored a series of bulletins on the finance plans in use by gas companies throughout the country for financing the sale of gas appliances.

In 1931 a committee supervised the survey of merchandising practices in the industry which led to the adoption of a set of merchandising principles for the guidance of member companies in the development of cooperative relationships with dealers. These principles were approved by the Executive Board and have done much to improve trade and dealer cooperative movements, to promote the sale of approved gas appliances and to better relations existing between utility companies and the public.

In the promotion of the gas busi-

ness, sales and servicing of appliances go hand in hand. In its interim reports to the industry the Committee on Appliance Servicing has given special attention to the vital questions of appliance servicing personnel, their selection, training and supervision; the control of quality of servicing work, method and control of costs; installation work as it affects proper appliance results, and other factors.

The Window and Store Display Committee issues a periodic bulletin containing helpful suggestions on the treatment of backgrounds, color schemes, decorations, layout and other necessary phases of displays. These bulletins have also contained reproductions of a great variety of displays covering all types of appliances, seasonable and holiday displays, and other informative material. Fifteen hundred copies are distributed, 1,000 of which are sent by special request.

An important phase of the Commercial Section's work has been conducted by the Home Service Department. Its activities have become so widespread that a separate article in this series will be devoted to a description of its work.

#### *Salesmen's Training Course*

One of the most vital services of the Commercial Section and one with far reaching consequences in the industry was the preparation and sponsorship of a Course in Domestic Gas Salesmanship. This course, which was based on a survey of the sales practices of more than ninety of the most progressive companies, received an immediate and wholehearted response in the industry. It offered a ready tool for the training of company sales representatives in selling gas appliances and gas service to the public. Thousands of salesmen and contact representatives now active in the gas industry benefitted from taking the course which was made available at a cost much below the expense that any single company would have to meet in developing its own training course individually.

As a part of the A. G. A. Program of Action inaugurated by the National Directing Committee of Executives in a concerted effort to increase the use of gas for domestic cooking, the Commercial Section in 1933 sponsored the preparation of a three-unit course en-

titled, "Tell Them about Cooking-with-Gas." Designed for the use of gas company employees, the course provided accurate knowledge of gas cooking and modern gas ranges. The course has been utilized by approximately 3,400 individuals in the gas industry.

The question of sales research and analysis as the basis for sound planning was also treated in a course in sales administration and management in the gas industry, prepared under the section's supervision. This course presented the experience of the industry generally in connection with all the important factors associated with the administration of a sales department. It presented for the first time a symposium of ideas representative of the entire industry.

#### *Rate Studies*

Of special significance as related to commercial activities has been the investigation and study of rate structures which help to guide management in establishing rate schedules that promote gas use and in modifying schedules which tend to restrict such use or supply sales resistance. Looking toward a solution of these problems important papers have been presented before Commercial Section meetings bearing such titles as "Competitive Rate Making for Future Sales" and "Promotional Rates and Their Effect." Other papers before Commercial Section meetings have focused attention on employee selling, long term financing of appliance sales, dealer relations, advertising, and many other vital phases of the industry's activities.

Among the new activities to be taken up by the section is the study of the economics of the gas industry, covering production, transmission, distribution, servicing and marketing angles. A committee jointly representative of the sales, technical and rate structure aspects of the gas industry has been organized to correlate all reports and publications of a research nature having a direct bearing on markets and sales trends. Known as the Committee on Market and Economic Research, it will sponsor any further research necessary along these lines.

Other activities of the Commercial Section include the preparation of movies and slide films on the domestic uses of gas, participation in equipment

exhibits, and the maintaining of cooperative relations with trade associations of allied dealers and with commercial financing organizations. The section also assists in the preparation of promotional material on domestic gas service and conducts special studies of competitive situations.

### **Minneapolis-Honeywell Appointments**

**E. B. EVLETH**, affiliated with the Minneapolis-Honeywell Regulator Company for twelve years, has been appointed vice-president and general manager of the Brown Instrument Company, a division of Minneapolis-Honeywell in Philadelphia. Mr. Evleth succeeded William J. Hajek who has taken a six months' leave of absence before resumption of active duties in an executive capacity with the Minneapolis office.

C. L. Saunders, former regional sales manager at Chicago, has been appointed to succeed Mr. Evleth as resident vice-president in charge of the midwest region for the Minneapolis-Honeywell Company.

### **Oscar H. Fogg Elected New E. E. I. Trustee**

**A**T the annual convention of the Edison Electric Institute at Chicago, Oscar H. Fogg, vice-president of the Consolidated Edison Company of New York, Inc., and past president of the American Gas Association, was elected as a trustee of the institute for a three-year term.

Through the retirement of Frank W. Smith, also of Consolidated Edison, and B. C. Cobb of the Commonwealth and Southern Corporation, the number of trustees of the institute for the term expiring in 1940 has been reduced to nine. Other retiring trustees were re-elected.

### **Accident Prevention Group Meets**

**T**HE third meeting of the Accident Prevention Committee was held at Association Headquarters on Friday, June 25, with the chairman, C. J. Gefvert, of the Consolidated Edison Company of New York, presiding. Those present included: A. W. Breeland, Lone Star Gas Company, Dallas, Texas; Roy M. Godwin, Philadelphia Electric Company, Philadelphia, Pa.; H. H. Bertram, Consolidated Gas Electric Light and Power Company of Baltimore, Baltimore, Md.; H. A. Ptolemy, Public Service Company of Northern Illinois, Chicago, Ill.; E. J. Hanlon, The Peoples Gas Light &

Coke Company, Chicago, Ill.; W. J. McVay, Consolidated Electric & Gas Company, New York, N. Y.; John M. Orts, Public Service Electric & Gas Company, Newark, N. J.

The committee reviewed a series of special reports which will be published shortly, covering Safety Posters, Safety Conference Programs, Safety Inspections, Public Accidents, Safety on Customers' Premises, and a series of Safety Messages from gas company executives.

The first of six Safety Messages from gas company executives appears in this issue of the A. G. A. MONTHLY from Herman Russell, president of the American Gas Association, and president of the Rochester Gas & Electric Corporation.

### **Gas Revenues Increase 10 Per Cent in April**

**M**ANUFACTURED and natural gas utility revenues amounted to \$74,172,700 in April 1937, as compared with \$67,333,500, for the corresponding month of 1936, an increase of 10.2 per cent, according to figures compiled by the Association's statistical department.

The manufactured gas industry reported revenues of \$31,502,000 for the month, an increase of 3.8 per cent from the same month of the preceding year. The natural gas utilities reported revenues of \$42,670,700, or 15.4 per cent more than for April 1936.

Total sales of manufactured gas for the month were 33,050,600,000 cubic feet, an increase of 8.5 per cent. Natural gas utility sales for the month amounted to 125,831,800,000 cubic feet, an increase of 19.2 per cent.

Manufactured gas sales for domestic uses, such as cooking, water heating, refrigeration, etc., were about the same as in April 1936. Sales for house heating purposes, however, gained 25.5 per cent, while industrial and commercial uses gained 16.0 per cent.

Natural gas sales for domestic purposes showed an increase of 18.9 per cent for the month, while industrial sales also gained 18.9 per cent.

### **H. A. Stutchbury Dies**

**H**ERBERT A. STUTCHBURY, general superintendent of the New York State Electric and Gas Corporation, Plattsburg, N. Y., died June 22. He was seventy years old.

A native of Bristol, England, Mr. Stutchbury came to America as a young man and obtained employment with the Rochester Gas and Electric Company. Subsequently he served for several years as general superintendent of the Yonkers Gas and Electric Company before going to Plattsburg as superintendent of the Plattsburg Light, Heat and Power Company thirty-one years ago. He was a member of the American Gas Association.



# Washington Ties-in with "Penny Wisdom"



Carter McFarland

**T**AKING full advantage of one of the most potent publicity possibilities that has come its way in a long time, Washington Gas Light Company last week tied-in to the hilt with Pete Smith's Technicolor short "Penny Wisdom" during its week-long showing at Loew's Capitol Theater in Washington. Gas company executives who previewed the short several weeks before its local run found with pleasure that the picture lived up to its advance notices—that, though unintended as such, it was a perfect promotion of modern gas cookery, and that the whole short was done in the highly amusing Pete Smith manner with no unpleasant commercial flavor to detract from its reception and its entertainment value. Here in fact was one of those rare coincidences—a picture made purely for its entertainment value that told a convincing story for modern gas cookery.

Plans were immediately made with the theater and the *Washington Times*, a local newspaper, to cooperate with the Washington Gas Light Company in the promotion of this short from the gas cooking angle. Consequently, when the first patrons came into the theater early in the morning of Friday, May 21, they were greeted in the main lobby by an attractive gas company home service girl standing before a beautifully modern automatic gas kitchen. Across the kitchen in silver

By **CARTER MCFARLAND**

Washington Gas Light Co.,  
Washington, D. C.

letters were emblazoned the words "Prudence Penny Automatic Gas Kitchen."

Signs on the gas range and the gas refrigerator installed in the kitchen informed theater-goers that these beautiful gas appliances, duplicates of those used by Prudence Penny in "Penny Wisdom," would be given away by the Washington Gas Light Company to some lucky patron of the theater that

Automatic Gas Kitchen, see the appliances and cast their ballots.

Leaving the theater thousands of them paused at the model kitchen, inspected the appliances, asked questions of the home service girl in attendance, filled out their ballots and wandered out—gas cookery conscious!

To add to the impetus of the promotion, large space advertisements and news stories were run in the *Washington Times* almost daily during the seven-day run of the picture. The ads, in theater style layout, urged people to go to Loew's Capitol and see the five star Pete Smith short featuring Prudence Penny, Pete Smith, Gertrude Short, a modern gas range and a modern gas refrigerator.

On the final night of the "Penny Wisdom" run the drawing of the prize winners was made in the model kitchen. With crowds gaping and newspaper cameras flashing, Paul Whiteman and Phil Regan, famous radio and stage stars, dramatically withdrew the ballots of the lucky recipients. Announcement of the winners was made the next day in a large space ad in the *Washington Times*. The *Times* also ran a news story on the drawing with a three column picture of Whiteman and Regan making the drawings in the Prudence Penny Automatic Gas Kitchen.

The attendance at Loew's Capitol, Washington's largest theater, during the run of "Penny Wisdom" was between 80,000 and 100,000. All patrons saw the screen trailer and more than 15,000 participated in the awarding of the modern gas appliances. The great crowds which gathered around



*Phil Regan, left, and Paul Whiteman, radio and stage stars, making drawings of the winners of the modern gas appliances donated in connection with the showing of "Penny Wisdom" in Washington*

week. Ballots were available and all were invited to take advantage of the opportunity to receive one of the valuable gifts.

Once inside the theater Washingtonians viewed the convincingly indirect gas cookery story of "Penny Wisdom," chuckled at Pete Smith's droll remarks about "pitying the poor housewife" and his amazement at how "easy as pie" it was when you knew how and had the right equipment. Soon after they looked at a screen trailer informing them again that duplicates of the beautiful modern gas range and the gas refrigerator used in "Penny Wisdom" would be given away to some patrons of the theater during the week and inviting them to visit the Prudence Penny

(Continued on page 288)



# A New Method for Determining Hourly Gas Input Rates



F. O. Suffron

IN recent years, the gas industry has expended considerable effort in research and developmental activities undertaken to improve the efficiency, safety and general overall performance of all gas burning appliances. In general, results of these activities have been gratifying and, as a consequence, contemporary gas appliances are capable of delivering much better service than their predecessors. It has become increasingly important, however, that these new improved models be accurately adjusted in the field in order that their superior performance may be fully capitalized upon. An essential part of such a field adjustment is insurance of the proper B.t.u. input rate to the burners. Generally speaking, any appliance will deliver its maximum output consistent with optimum efficiency and safety at the approved manufacturer's specified input rating and it should, obviously, be adjusted to this particular rate for best performance.

## Burner Adjustment

Adequate steps have been taken in many situations to insure proper adjustment of gas burners. In the case of certain gas utilities, for example, appliances are adjusted to the correct gas rate by means of displacement meters in the field, or in the shop prior to installation. In other cases certain expedients are resorted to in order to obtain an approximately correct adjustment as, for example, by comparing visually the burner being adjusted to a similar burner which has previously been adjusted by a meter and which is used as a standard. However, in a great many instances, adjustments of appliances are made visually because a meter adjustment would not be convenient or feasible. It seems reasonable to con-

By F. O. SUFFRON

Supervisor, Pacific Coast Branch,  
A. G. A. Testing Laboratories

clude that if an inexpensive portable flow meter of suitable accuracy were available, it would be employed quite widely for appliance adjustment services and might even be substituted for displacement meters in the interest of more rapid and convenient field adjustments.

In order to satisfy this need, the writer undertook the development of a portable instrument which could be easily carried by a fitter and which

would be capable of indicating quickly and conveniently the rate of gas flow through an orifice without reference to displacement meter readings. The principle embodied in the instrument which has been developed is, it is believed, new in the art of gas flow measurement. It deals, fundamentally, with the determination of the gas flow from an orifice (orifice on the appliance) in terms of another calibrated orifice or orifice of known flow characteristics connected in series with the appliance orifice.

The principle involved in this development is illustrated by the patent drawings shown as Figures 1 to 6 inclusive and by the schematic sketch of Figure 7. As will be noted from the latter figure, a calibrated orifice ( $A_2$ ) is installed as the outlet of a suitable chamber designed to reduce the velocity head of the flow stream to an insignificant amount. Connection is made from this chamber to the appliance

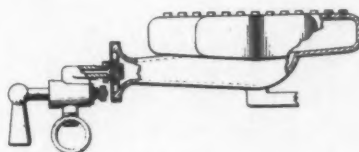


Figure 1

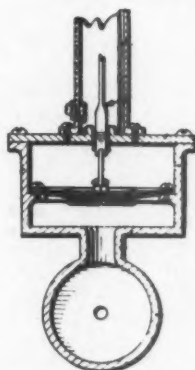


Figure 3

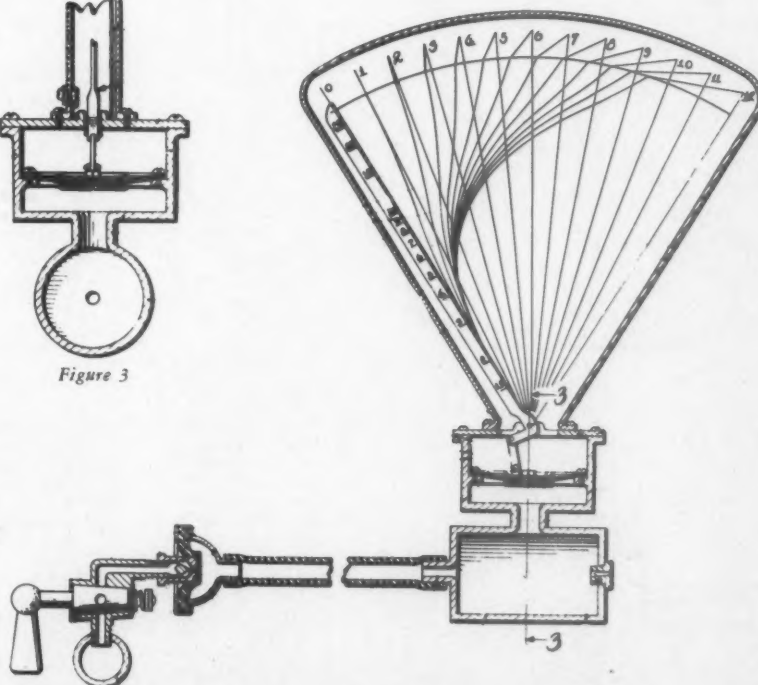


Figure 2

orifice and a means is provided for attachment of a convenient pressure gage to the chamber of the device. A "U" gage of the type shown in Fig. 1 is adequate if mathematical calculations are to be used in determining the rate of flow from the appliance orifice.

The principle of operation of this device is premised on the accepted equation governing the flow of gas through an orifice which may be stated as follows:

$$Q = 1658.5 K A \sqrt{\frac{P}{d}} \quad (1)$$

Where:

Q = flow of gas through orifice, cubic feet per hour,

K = coefficient of discharge through orifice,

A = area of orifice, square inches,

P = gas pressure at orifice, inches of water gage, and

D = specific gravity of gas (air = 1.0).

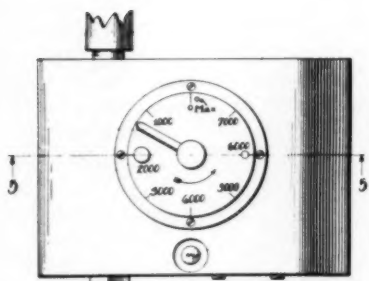


Figure 4

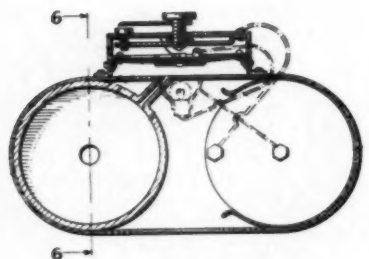


Figure 5

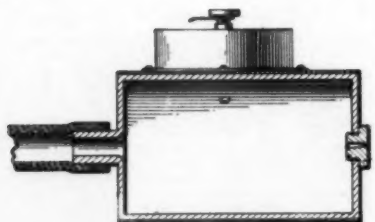


Figure 6

The mathematical development of the problem may be made through expansions of this basic formula for flow

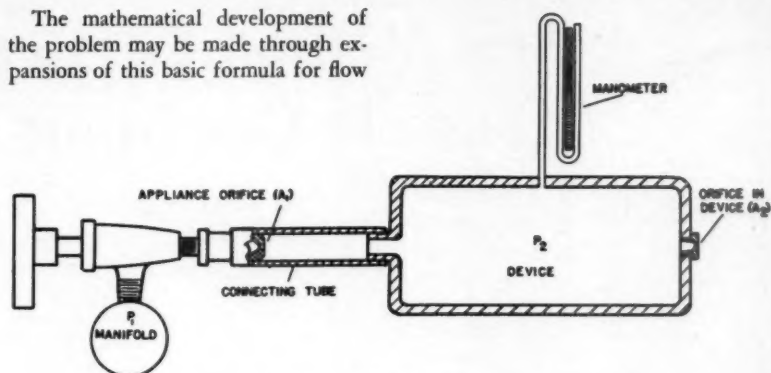


Figure 7. Schematic sketch of flow measurement device

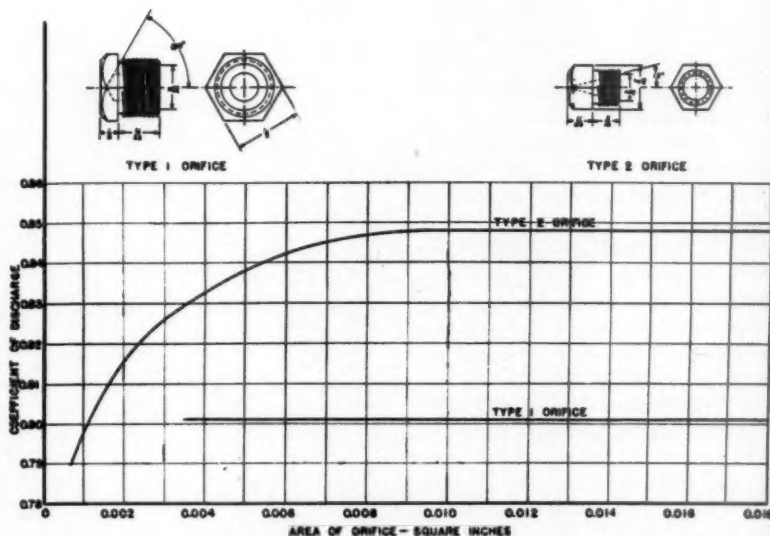


Figure 8. Coefficients of discharge for various sizes and types of orifices

of gas through an orifice, using the following symbols for the characteristics of the system:

$P_1$  = gas pressure (static) in manifold, inches of water,

$P_2$  = gas pressure (static) in device with  $A_2$  open, inches of water,

$A_1$  = area of orifice in manifold, square inches,

$A_2$  = area of orifice in device, square inches,

$Q_1$  = flow through orifice  $A_1$ , without device in place, cubic feet per hour,

$Q_2$  = flow through orifice  $A_1$  or  $A_2$  with device in place, cubic feet per hour,

$K_1$  = coefficient of discharge of orifice  $A_1$ ,

$K_2$  = coefficient of discharge of orifice  $A_2$ ,

$d$  = specific gravity of gas (air = 1),

$H$  = heating value of gas, B.t.u. per cubic foot, and

$I$  = rate of flow of gas, B.t.u. per hour ( $Q \cdot H$ ).

There are two conditions of flow possible of solution, namely:

a. When gas is passing through orifice  $A_1$  without the device in place. This condition is the one desired and the applicable form of equation (1) is:

$$Q_1 = 1658.5 K_1 A_1 \sqrt{\frac{P_1}{d}} \quad (2)$$

b. When the gas is flowing through both orifices with the device in place. Under this condition it is evident that the rates of gas flow through orifices  $A_1$  and  $A_2$  are identical. Two forms of equation (1) may be written, therefore, for this condition of flow as follows:

$$Q_2 = 1658.5 K_2 A_2 \sqrt{\frac{P_1}{d}}, \text{ or} \quad (3)$$

$$Q_2 = 1658.5 K_1 A_1 \sqrt{\frac{P_1 - P_2}{d}} \quad (4)$$

In equation (2)  $K_1$  and  $A_1$  are generally unknown or cannot be determined readily. Therefore, they must be replaced by known terms. Equation

(4) may be solved for  $K_1 A_1$  and this value substituted in equation (2), or

$$Q_1 = Q_2 \sqrt{\frac{P_1}{P_1 - P_2}}$$

This introduces the unknown quantity,  $Q_2$ , which may be eliminated by substituting its value as given in equation (3), or

$$Q_1 = 1658.5 K_2 A_2 \sqrt{\frac{P_1 P_2}{(P_1 - P_2) d}} \quad (5)$$

Equation (5) is that governing the flow conditions involved in operation of the device and that which permits calculation of the flow of gas through an orifice of unknown size and characteristics in terms of readily ascertainable variables. In analyzing this equation it will be seen that the flow of gas through the appliance orifice ( $Q_1$ ) under normal conditions, that is, without the device in place, is expressed as a function of five variables  $K_2$ ,  $A_2$ ,  $P_1$ ,  $P_2$ , and  $d$ . The coefficient of discharge of the orifice in the device ( $K_2$ ) may be calibrated or, for less precise work, selected from Figure 8 if the orifice employed is either of the two types indicated thereon.\* The area of the orifice in the device ( $A_2$ ) will, of course, be known from the drill size employed, provided reasonable care is exercised in drilling the orifice. Table 1 gives the areas corresponding to common sizes of twist drills. The pressure in the device  $P_1$  may be observed with the device in place and with gas flowing. The pressure in the manifold before the appliance orifice may be also observed on the manometer (Figure 7) by the simple expedient of placing a finger over, or otherwise closing off, the orifice in the device. The specific gravity of the gas ( $d$ ) is generally a known characteristic of the gas in any particular community.

While the form of device shown in Figure 7 is probably the least complex application of the principle discussed herein, the fact that its use would require rather complicated calculations or reference to tables or charts renders it less convenient than would be desirable. A more convenient application seems to be a direct reading chart, as illustrated in Figure 9.

\* These curves plotted from data given in Bulletin No. 1, Flow of Gas Through Orifices on Domestic Gas Appliances, American Gas Association Testing Laboratories.

Figure 9.  
Sample direct reading chart

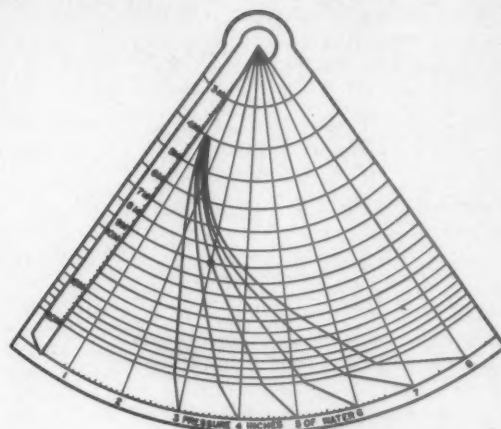


TABLE 1  
STANDARD TWIST DRILL SIZES  
Giving Designations and Areas

Designation	Area Sq. In.	Designation	Area Sq. In.	Designation	Area Sq. In.
1/2	.1963	3	.03563	3 1/2	.00690
3/4	.1843	4	.03431	4 1/2	.00687
1	.1726	5	.03317	4 3/4	.00622
1 1/8	.1613	6	.03269	4 7/8	.00581
1 1/4	.1503	7	.03241	5	.00528
1 3/8	.1398	8	.03173	5 1/8	.00515
1 1/2	.1340	9	.03110	5 3/8	.00484
1 5/8	.1296	10	.03017	5 7/8	.00479
2	.1282	11	.02940	6	.00454
2 1/8	.1238	12	.02865	6 1/8	.00419
2 1/4	.1198	13	.02806	6 3/8	.00385
2 3/8	.1170	14	.02761	6 7/8	.00353
2 1/2	.1116	15	.02688	7	.00317
2 5/8	.1104	16	.02602	7 1/8	.00307
3	.1064	17	.02545	7 3/8	.00278
3 1/8	.1014	18	.02461	7 7/8	.00238
3 1/4	.1006	19	.02351	8	.00212
3 3/8	.09511	20	.02320	8 1/8	.00173
3 1/2	.09281	21	.02256	8 3/8	.001698
3 3/4	.09026	22	.02164	8 7/8	.001452
4	.08657	23	.02036	9	.001385
4 1/8	.08456	24	.01986	9 1/8	.001320
4 1/4	.08194	25	.01936	9 3/8	.001257
4 3/8	.07843	26	.01917	9 7/8	.001195
4 1/2	.07670	27	.01863	10	.001134
4 3/4	.07163	28	.01815	10 1/8	.001075
5	.06922	29	.01755	10 3/8	.001018
5 1/8	.06835	30	.01697	10 7/8	.000962
5 1/4	.06605	31	.01629	11	.000855
5 3/8	.06213	32	.01553	11 1/8	.000804
5 1/2	.06202	33	.01549	11 3/8	.000765
6	.06026	34	.01453	11 7/8	.000755
6 1/8	.05811	35	.01296	12	.000670
6 1/4	.05557	36	.01227	12 1/8	.000616
6 3/8	.05542	37	.01131	12 3/8	.000531
6 1/2	.05350	38	.01057	12 7/8	.000491
7	.05187	39	.01003	13	.000452
7 1/8	.04909	40	.00968	13 1/8	.000398
7 1/4	.04753	41	.00950	13 3/8	.000346
7 3/8	.04600		.00940	13 7/8	.000314
7 1/2	.04449		.00891	14	.000254
8	.04314		.00849		.000201
8 1/8	.04301		.00809		.000191
8 1/4	.04083		.00778		.000165
8 3/8	.03836		.00754		.000143
8 1/2	.03758		.00724		

Note—Designations are in fractions of an inch, in Standard Twist Drill letters, or in Standard Twist Drill numbers, the latter being the same as Steel Wire Gage numbers.

For construction of such a chart equation (5) may be modified to more convenient forms by solving it for ( $P_2$ ), or

$$P_2 = \frac{Q_2^2}{\frac{(1666 K_2 A_2)^2}{d} + \frac{Q_2^2}{P_1}} \quad (6)$$

where readings in cubic feet per hour are desired, or

$$P_2 = \frac{I_2^2}{\frac{(1666 K_2 A_2 H)^2}{d} + \frac{I_2^2}{P_1}} \quad (7)$$

where flow results will be in terms of B.t.u. per hour.

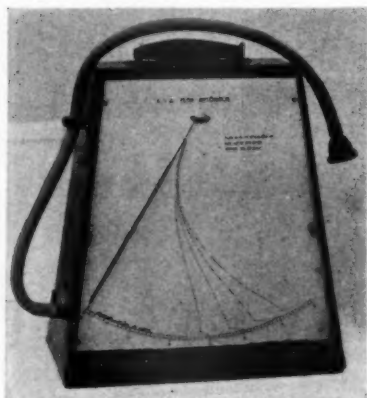


Figure 10. Portable meter embodying diaphragm pressure indicating element and direct reading chart

The procedure followed in constructing a suitable chart is illustrated by Figure 9 and the following discussion. It should be evident that the device actuating mechanism for the type of chart indicated must be such as to give an arm movement which is proportional to gas pressures in the device chamber throughout the range of the chart. The diaphragm actuating mechanism illustrated in Figures 2 and 3 is an example of a mechanical linkage that will serve this purpose. With such a mechanism the base pressure lines (straight) as shown are equal divisions on the chart (Figure 9) and are designated in any convenient unit (inches of water for example) to be consistent with equations (6) and (7) and are, of course, indicative accurately of static gas pressure in the device. The arm is divided into any convenient scale, logarithmic being recommended as generally providing the most legible curves. The range of units on the arm must, obviously, encompass the range

TABLE 2  
CHAMBER PRESSURES FOR VARYING GAS RATES  
AND MANIFOLD PRESSURES

$A_2$  = No. 56 D.M.S. (0.001698)  
 $K_2$  = 0.815  
 $H$  = 1100 B.t.u./Cu.Ft.  
 $d$  = 0.6

		Gas Pressure in Chamber ( $P_2$ )—Inches of Water					
Gas Rate ( $I_1$ ) B.t.u. per Hour 1100 B.t.u.; 0.6 Sp.Gr.	Gas Pressure in Manifold ( $P_1$ ) Inches of Water	3	4	5	6	7	8
4,000		.944	1.094	1.158	1.205	1.239	1.267
5,000		1.319	1.482	1.601	1.692	1.762	1.820
6,000		1.591	1.835	2.020	2.166	2.282	2.380
7,000		1.818	2.145	2.395	2.610	2.780	2.928
8,000		2.001	2.415	2.730	3.010	3.233	3.436
9,000		2.152	2.623	3.018	3.358	3.650	3.905
10,000		2.272	2.805	3.260	3.662	4.010	4.318
11,000		2.377	2.962	3.378	3.934	4.335	4.705
12,000		2.455	3.088	3.650	4.159	4.618	5.030
13,000		2.525	3.198	3.806	4.360	4.865	5.325
14,000		2.582	3.285	3.932	4.530	5.072	5.580
15,000		2.628	3.370	4.045	4.675	5.262	5.810
16,000		2.668	3.430	4.140	4.805	5.425	6.002
17,000		2.705	3.488	4.225	4.920	5.572	6.185
18,000		2.731	3.535	4.295	5.015	5.695	6.340
19,000		2.758	3.580	4.358	5.100	5.810	6.480
20,000		2.781	3.615	4.415	5.175	5.908	6.520

of flows to be encountered and the units for this example will be given in B.t.u. per hour.

With an arm of suitable length and having suitable divisions, the construction of the curved lines may be accomplished graphically. With the center of the arm as a focal point arcs of circles having radii same as corresponding flow rates on the arm may be inscribed on the chart. Predetermined value of flow ( $I_1$ ) and values for  $K_2$ ,  $A_2$ ,  $H$ ,  $P_1$ , and  $d$  in equation (7) are

then selected and solution made for  $P_2$ . For example, if

$I_1$  = 9,000 B.t.u. per hour  
 $K_2$  = 0.815 (from Figure 2, type 2 orifice)  
 $A_2$  = No. 56 D.M.S. (0.001698 sq.in.)  
 $H$  = 1,100 B.t.u. per cubic foot  
 $d$  = 0.60  
 $P_1$  = 5.0 inches of water

then  $P_2$  = 3.018 inches. Thus, a point is made at the intersection of the radial pressure line "3.018 inches" and the arc identified with 9,000 B.t.u. per hour ("9M" on arm) on the chart

(Continued on page 284)

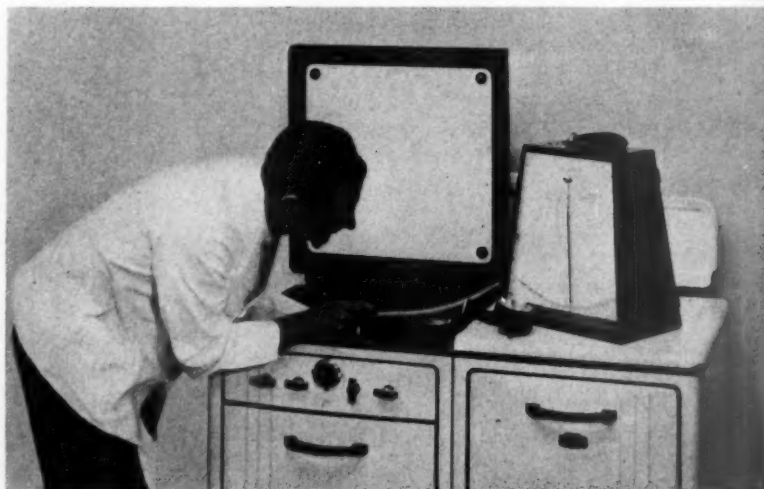


Figure 11. Portable meter being employed for adjusting gas rate to range top burners



## Personal and Otherwise

### James H. Jourdan Retires

**A**FTER fifty-five years of association with The Brooklyn Union Gas Company and its predecessors, James H. Jourdan, chairman of the Board of Directors, has retired from active service. His retirement became effective July 1. He will continue as a member of the Board of Directors.

### R. W. Gallagher Speaker at Findlay Gas Celebration



R. W. Gallagher

**R**ALPH W. GALLAGHER, former president of the American Gas Association, was one of the principal speakers at the Golden Oil and Gas Celebration in Findlay, Ohio, June 20 to 26, marking the fiftieth anniversary of the development of natural gas there.

Mr. Gallagher and Axtell J. Byles, president of the American Petroleum Institute, spoke June 21 at the dedicatory ceremonies on the site of the new monument erected at the Oesterlen well, the first gas well in the area.

Mr. Gallagher paid tribute to the oil and gas pioneers who made possible the drilling of the Karg and Oesterlen wells. He also told of the great benefits which have been derived through the extension of pipe lines in this country.

Fifty years ago Findlay, Ohio, emerged from the obscurity of a small town and blossomed into a thriving city in a remarkably short time. The drilling of the Oesterlen and Karg wells in 1884 and 1886 respectively clearly proved the presence of a heavy volume of natural gas. Cheap fuel in abundance brought into the city 31 new industries in the course of a year—glass plants, rolling mills, iron mills, pipe mills, etc.—and the city grew by leaps and bounds.

In 1887 the city staged a spectacular "Gas Boom" celebration which attracted the attention of the world to the advantages of cheap fuel and the fact that the volume natural gas had made possible its economic and practical application to the mechanical arts for the first time. Excursion trains brought upward of fifty thousand visitors, and the crowded streets were decorated with great arches of colored gas lights, surmounted by flaming gas torches. Every gas well in the sector was turned wide open and lighted, and the glow was visible for fifty miles.

The celebration this year was in commemoration of the original celebration. It

was directed by O. D. Donnell, president, Ohio Oil Company, and managed by Harry Botsford, of Titusville, Pa.

### Advertising Club Elects Squier



Wilmot R. Squier

reporter-turned-advertiser as its president last week, giving Squier the distinction of being the youngest person ever to hold that post.

Squier became advertising manager of the Washington Gas Light Company seven years ago at 18. Previously he was a reporter on a Washington newspaper beginning his career at 14.

During the years that Squier has written and directed Washington Gas Light's advertising that company has had outstanding success in its merchandising efforts and received no less than eight national awards for meritorious public utility advertising copy. He is known in public utility circles for the directness and forcefulness of his copy and the potent selling appeal of his campaigns.

### Woman Is Awarded McCarter Medal

**M**RS. ELIZABETH DALTON, clerk at the Long Island City office of the Consolidated Edison Company of New York, received the McCarter Medal for life saving on June 29. She is the second woman employee of Consolidated Edison and the sixth woman in the United States to receive this award. The McCarter Medal, an award of the American Gas Association, is given to employees of public utility companies who save victims of asphyxiation by using the prone pressure method of resuscitation.

On March 4, Mrs. Dalton discovered a man overcome by gas and applied the prone pressure method of resuscitation until the arrival of the Consolidated Edison emergency truck. The emergency crew used the inhalator for twenty minutes when the patient was announced out of danger and taken to the hospital.

W. J. Adams, manager of the commercial relations department at the Long Island City office of Consolidated Edison, presented the medal to Mrs. Dalton at special ceremonies in his office.

### Miss Spear Celebrates 20th Anniversary



Miss Mary Spear

**K**NOwn to more natural gas men than probably any other person, Miss Mary Spear, who has charge of membership for the American Gas Association, has not missed a natural gas convention in 20 years. It was just 20 years ago in July that Miss Spear joined

the Natural Gas Association of America, becoming librarian at its headquarters in Pittsburgh, Pa. She became a part of the A. G. A. staff in 1927 at the time of the merger of the Natural Gas Association of America with the American Gas Association.

Before entering gas association work, Miss Spear was employed as librarian in the Carnegie Library at Braddock, Pa., the first Carnegie library in the United States. Later she was in charge of the Carnegie Library at McKeesport, Pa.

The A. G. A. staff and a host of friends in the gas industry join in congratulating Miss Spear on her 20th anniversary.

### Laclede Appoints New Sales Manager



G. H. Schlatter

**G**EORGE H. SCHLATTER was recently named general sales manager of The Laclede Gas Light Company, St. Louis, Mo.

Mr. Schlatter started in the utility business in 1914 with the Dawes Brothers in the Central Indiana Group where he read meters, laid mains, ran service lines, and worked in the office. In 1919 when the organization decided to start a sales division, Mr. Schlatter was chosen to set up the new department.

When the Dawes Brothers took over the Jacksonville Gas Company at Jacksonville, Fla., in 1924, Mr. Schlatter was transferred

to that company; and in 1927 when the company was purchased by the Commonwealth Power Corporation, he was transferred to Birmingham, Ala. He became assistant sales promotion manager of the Electrolux Refrigerator Sales Company in 1931, but after two years decided to return to the utility business and accepted a position with the Iroquois Gas Corporation of Buffalo, N. Y. He went to The Laclede from that company.

During the time he was in the south he acted as secretary-treasurer of the Southern Gas Association.

### New Vice-Presidents

AS a further step in the unification of system operations, three new vice-presidents of Consolidated Edison Company of New York were elected at the meeting of Trustees on May 24. They were A. Augustus Low, executive vice-president of Brooklyn Edison Company; David C. Johnson, president of the New York Steam Corporation, and H. R. Woodrow, engineer of design and planning—Electric, who resigned as vice-president of Brooklyn Edison prior to his election as an officer of Consolidated Edison.

J. F. Hunter, engineer of construction—Gas, became assistant vice-president.

### Cuthrell Heads World's Fair Group

THE Committee on New York World's Fair of 1939 representing both the American Gas Association and the Association of Gas Appliance and Equipment Manufacturers has announced the formation on June 16 of a new corporation to be known as Gas Exhibits, Inc. Set up under the laws of the State of New York, the new corporation has been created for the purpose of constructing and operating an exhibit building for the gas industry at the New York World's Fair.

An appropriate site at the Fair will be acquired and the resources of the gas industry will be utilized to bring to the attention of the thousands of visitors to the Fair, the practical and economic application of gas in home and industry, and the characteristics and qualities of modern gas appliances and equipment.

Hugh Cuthrell, vice-president, The Brooklyn Union Gas Company, Brooklyn, N. Y., is president of Gas Exhibits, Inc. Other officers are: William T. Rasch, president, American Gas Products Corp., and president, A.G.A.E.M., vice-president; Nils T. Sellman, assistant vice-president, Consolidated Edison Co. of N. Y., treasurer; and Charles W. Berghorn, executive secretary, A.G.A.E.M., secretary.

A board of directors has been set up con-

sisting of the following: Nils T. Sellman, Joseph D. Creveling, Walter C. Beckjord, Frank D. Cadwallader, F. X. Mettenet, Marcy L. Sperry, Henry P. J. Steinmetz, F. J. Rutledge, Andrew J. Gonnoud. Hugh Cuthrell, William T. Rasch, Folke E. Sellman, Albert P. Brill, John A. Fry, Frank H. Adams, I. W. Peffly, H. N. Ramsey, George A. Humphrey, Merrill N. Davis.

### Appointed Assistant Vice-President



J. D. Dingwell, Jr.

JAMES D. DINGWELL, JR., who for several years has been assistant general sales manager of the Washington Gas Light Company, has been appointed to the position of assistant vice-president in charge of personnel relations of the Company.

The new assistant vice-president brings to his position 13 years of diversified experience in public utility service. While he has gained a reputation throughout the industry for his successful merchandising tactics, he has shown an equally strong aptitude for personnel organization and administration.

In his new capacity as head of the personnel department he will guide the policies of his company in matters of personnel selection, transfer and promotion as well as medical care and personnel counsel.

Mr. Dingwell became a member of the Washington Gas Light Company organization in 1933.

### Connersville Appointments

J. B. TROTMAN, manager Turbine Pump division, of the Roots-Connersville Blower Corp., Connersville, Ind., announces recent appointments of zone representatives, as follows:

Carl B. Sunderland, Muncie, Ind.—covering the states of Indiana, Ohio, Michigan, Illinois, and Kentucky.

J. J. Heinrikson, Kansas City, Mo.—covering the western part of Missouri, Kansas, most of Nebraska, and the southwestern quarter of Iowa.

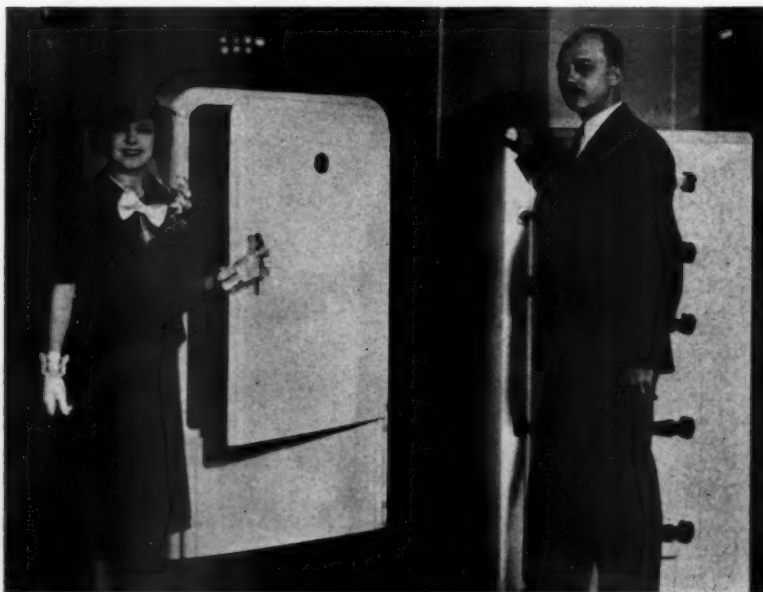
Paul C. Rowe, Newark, N. J.—covering the northern half of New Jersey.

### Water Gas Conversion

THE Salem Gas Light Company, Salem, Mass., has awarded a contract to the Semet-Solvay Engineering Corporation, of New York, for the conversion of a standard 8-foot water gas machine to use the Semet-Solvay reverse flow process.

The machine will be equipped with back-run and will be enabled to use either gas oil or heavy oil for enrichment. The work will be completed this summer.

### Millionth Gas Refrigerator Shown



Pictured here are Mrs. Martin Johnson, noted explorer, and Nils T. Sellman, assistant vice-president in charge of sales, Consolidated Edison Co. of New York, comparing the millionth Servel Electrolux gas refrigerator with the first one installed in this country, which Mr. Sellman sold in New York City ten years ago. The millionth refrigerator is a counterpart of those which Mrs. Johnson and her famous husband, the late Martin Johnson, took with them on the 1935-36 Borneo expedition

## Affiliated Association Activities

### P. U. A. A. Elects New Officers, Makes Better Copy Awards



Kenneth Magers

**KENNETH** MAGERS, Cincinnati Gas and Electric Company, was elected president of the Public Utilities Advertising Association at its annual meeting in New York, June 22.

Other new officers are: Howard F. Weeks, Consolidated Edison Company of New York, first vice-president; E. K. Hartzell, Lake Shore Electric Company, second vice-president; H. J. Rowe, Iowa Electric Light and Power Company, third vice-president; H. W. Olcott, Jr., Daniel Starch & Staff, secretary; H. C. Cannon, The Brooklyn Union Gas Company, treasurer.

Directors elected are: F. W. Crone, Consolidated Edison Company of New York; J. V. Macdonald, Edison Electric Illuminating Company, Boston; Clayton Cassidy, The Peoples Gas Light & Coke Company, Chicago, and Guy W. Philip, Kings County Lighting Company, Brooklyn.

#### Better Copy Awards

Prize winners in the 1937 Better Copy Contest sponsored by the association were announced at the meeting. The contest is held annually for all gas, electric and street railway companies in the United States and Canada. The awards to gas companies were as follows:

Gas load building newspaper advertising—Premier awards went to The Peoples Gas Light and Coke Company of Chicago, and to Consolidated Edison Company of New York.

The premier award in the gas public relations newspaper advertising division went to Los Angeles Gas and Electric Corporation.

Gas merchandise newspaper advertising—Premier award went to New York Power and Light Corporation, Albany.

Material designed to promote employee selling—Premier award to Philadelphia Electric Company.

Employee publications—Premier award to Public Service Corporation of New Jersey, Newark.

Bill enclosures and customer publications—Premier award to Consolidated Edison Company of New York.

Direct mail advertising—Premier award to Consolidated Edison Company of New York.

Gas displays—Premier award to Consolidated Edison Company of New York.

Poster advertising—Premier award to Southern California Edison Company, Los Angeles.

Radio advertising—Premier award to Pacific Gas and Electric Company, San Francisco.

### Canadian Gas Association



E. J. Tucker

He succeeds W. H. Munro, Ottawa, who presided at the two-day meeting which was attended by 175 delegates from all parts of Canada and the United States.

The new president announced that the next convention would be held in Toronto. It has been ten years since the association met there.

Other officers elected were: T. P. Pinckard, Hamilton, first vice-president; Julian

Garratt, Edmonton, Alta., second vice-president; G. W. Allen, Toronto, re-elected secretary-treasurer.

Executive members elected at the meeting were: J. D. Price, Montreal; H. B. Fairweather, Saint John, N. B.; Hugh McNair, Winnipeg; V. S. McIntyre, Kitchener; D. G. Munroe, Montreal; John Keillor, Vancouver; J. C. Dawson, Quebec; W. H. Munro, Ottawa; J. B. McNary, Hamilton; J. M. H. Young, London.

R. M. Conner, director, American Gas Association Testing Laboratories, was a speaker at the annual banquet at the Chateau Laurier.

### New England Gas Association

**T**HE New England Gas Association held a successful summer sales conference at the New Ocean House, Swampscott, June 10 and 11. More than 200 delegates took part in the meeting which brought out a stimulating discussion of competitive sales problems. R. J. Rutherford, Worcester, is chairman of the conference committee.

R. L. Fletcher, Providence, president of the New England Gas Association, opened the meeting with a brief discussion of the opportunities existing today for an alert and progressive sales force. The contribution of Home Service to the sales program was described by Eleanor G. Kingsley, chairman of the home service group, who followed Mr. Fletcher on the program.

Trends in sales training programs received thorough consideration in a sym-

## Convention Calendar

### AUGUST

- 16-19 International Stewards and Caterers Association\*  
Bellevue-Stratford Hotel, Philadelphia, Pa.
- 17-19 Pacific Coast Gas Association  
Seattle, Wash.
- Aug. 31-Sept. 3 National Association of Railroad and Utilities Commissioners  
Salt Lake City, Utah

### SEPTEMBER

- 6-10 American Chemical Society  
Rochester, N. Y.
- 19-23 American Transit Association  
The Greenbrier Hotel, White Sulphur Springs, W. Va.
- 23-25 American Trade Association Executives  
French Lick Springs Hotel, French Lick, Ind.
- 24-25 Accounting Section—Wisconsin Utilities Association  
Lawsonia Hotel, Green Lake, Wis.
- Wk. 27 AMERICAN GAS ASSOCIATION  
Cleveland, Ohio

### OCTOBER

- 4-8 National Restaurant Exposition\*  
Chicago, Ill.

- 11-15 National Safety Council  
Kansas City, Mo.

- 18-21 American Society for Metals  
Atlantic City, N. J.

- 18-23 American Dietetic Association  
John Marshall Hotel, Richmond, Va.

- Wk. 22 American Society for Metals\*  
Municipal Auditorium, Atlantic City, N. J.

### NOVEMBER

- 9-12 American Petroleum Institute  
Stevens Hotel, Chicago, Ill.
- 10-13 17th Annual Gas School Conference  
Iowa State College, Ames, Iowa.

### DECEMBER

- 6-7 National Industrial Council  
Waldorf Astoria Hotel, New York, N. Y.
- 8-9 National Association of Manufacturers  
Waldorf Astoria Hotel, New York, N. Y.

\* Includes exhibit sponsored by A. G. A. Industrial Gas Section.



posium which included talks by Ralph G. Wells, Boston University; L. A. Fiorani, New England Power Association; J. J. Quinn, Boston; R. J. Rutherford, Worcester.

A feature of this session was an able discussion of Home Modernization and New Construction by Harry Swenson, Chicago, A. G. A. home modernization counsellor. The local tie-in phase of this subject was covered by J. J. Quinn, Boston. The session concluded with an authoritative analysis of marketing problems by Erwin H. Schell of the Massachusetts Institute of Technology.

Clark Belden, executive secretary, N. E. G. A., in the first paper at the Friday morning session, presented an interesting summary of information on public relations obtained from approximately 40 companies in New England.

Other speakers at this session were: J. F. Tullie, Brockton; J. L. Johnson, Providence; Lois S. Kellogg, of the Standard Milling Co.; Wallace G. Strathern; Robert D. Stuart, Jr., Fall River; George N. Wallace and Spence Wilder, New York.

A Home Service Luncheon meeting was held Friday. After greetings were extended to this group by Mr. Rutherford, L. B. Crossman, Boston, spoke on the subject of "Home Service and Sales." Jessie McQueen, A. G. A. home service counsellor, next presented the highlights of the home service training course and conference recently held in Cleveland, Ohio. The final speaker was Miss Kellogg who described effective methods for modern baking.

### Pacific Coast Gas Association

**S**EATTLE will be the scene of the Pacific Coast Gas Association convention, August 17, 18 and 19. Representatives of gas companies, gas appliance dealers, and gas appliance manufacturers from the entire Coast will attend the convention, according to James F. Pollard, president of the Association. Mr. Pollard is also president of the Seattle Gas Company. He will preside at the meetings.

Highlighting the convention program will be talks by President Herman Russell, of the American Gas Association, and Floyd Parsons. It will be Mr. Russell's first visit to the Pacific Coast since he was superintendent of the gas plant in San Francisco thirty years ago.

Arrangements for the convention are being made by T. E. Roach, Washington Gas and Electric Company, Tacoma, general chairman for the convention. Members of his committee are: E. J. Ludeman, entertainment, and R. W. Coblentz, golf, both of the Washington Gas and Electric Company; J. Wilson Gaw, banquet; Chauncey H. Smith, hotel accommodations; L. H. Steele, attendance, reception and properties, Hyrum Crofts, registration; Frank Cadman, convention newspaper and L. S. Davis, transportation, all of the Seattle Gas Company; and



*Air view of Seattle, scene of the 44th annual convention of the Pacific Coast Gas Association, August 17-19*

Warren E. Kraft, Erwin, Wasey and Company, publicity. Mrs. James F. Pollard and Mrs. T. E. Roach will be convention hostesses.

Entertainment as well as business sessions will be included on the convention program. Special programs and entertainment for the wives and families of convention delegates are also being planned by the committee.

### Pennsylvania Natural Gas Men's Association

**F**RANK M. BREWSTER, president, Belmont Quadrangle Drilling Corp., Bradford, Pa., was elected president of the Pennsylvania Natural Gas Men's Association June 28 at the annual meeting of that organization. W. H. Locke, vice-president, United Natural Gas Co., Oil City, Pa., was elected vice-president and B. H. Smyers, Jr., Pittsburgh, was re-elected secretary-treasurer.

The following were elected to the board of directors for the new Association year: C. E. Bennett, Pittsburgh; H. D. Freeland, Waynesburg; T. B. Gregory, Emlenton; S. W. Meals, Pittsburgh; F. R. Phillips, Pittsburgh; T. W. Phillips, Jr., Butler; S. C. Preston, Pittsburgh; J. F. Robinson, Pittsburgh; F. F. Schauer, Pittsburgh; George E. Welker, Oil City; George Wittmer, Jr., Pittsburgh.

### Noted Coal-Gas Expert Dies

**C**APTAIN HERMAN BURGI, holder of the Congressional Medal of Honor for his heroism in the famous *General Slocum* steamship disaster in 1904, and one of the country's leading coal-gas experts, died June 24 in Springfield, Mass. Captain Burgi, who was 71 years old, was formerly com-

bustion engineer for all coal-gas operations of the Col. Charles H. Tenney properties in Massachusetts and New York.

Born in Switzerland, he received his early education in the schools of his native country. He then entered the Polytechnic School at Paris, France, and was graduated in 1883. Thereafter followed a most colorful career which included military service in Switzerland, employment in Holland and France, association with the Panama Canal project under De Lesseps, and service in the Dutch merchant marine.

Captain Burgi settled first in New York City, where he remained for 17 years. There he learned the gas business, beginning as a workman shoveling coal in a gas house. From that position he worked his way up to superintendent for the Light, Heat and Power Company at Astoria, N. Y. While in New York, as was the case in Springfield, he made his home for much of the year on his boat. It was while living on his boat in the East River that he was instrumental in saving more than 200 survivors from the ill-fated steamer *Gen. Slocum*.

In 1906, Captain Burgi went to Springfield, Mass., in connection with the installation of new machinery at the Springfield Gas Light Company's plant. In addition to his work as a combustion engineer for this company, he did engineering work for other concerns, including river engineering jobs.

He was an outstanding authority in the field of manufacturing gas from coke and held 10 different patents on processes and devices connected with the combustion of gases.

In his younger days Captain Burgi made frequent trips to Europe to inspect and bring back to this country new devices for the making of gas.

One of the strongest proponents of Connecticut River navigation, he led the fight for it for years.



## Accounting Section

Herbert E. Cliff, Chairman

H. W. Hartman, Secretary

E. J. Tucker, Vice-Chairman

# Loyalty Along the Gas Line

By H. B. SCHUM

Hope Natural Gas Co., Pittsburgh, Pa.

OF the various elements which go into the making of a valuable employee for any industry or organization, loyalty is of first importance, and it is safe to say that this qualification is usually manifested toward the company by its employees all along the line from the most lowly position to the highest. It is our purpose here, however, to discuss loyalty, not of a different kind, but along another line—the Gas Line.

We all know the hard and fast rule of the theatrical profession which says: "The show must go on." Not so well known but equally as binding is the hard and fast rule of the gas industry that "The flow must go on." This means loyalty of the staunchest kind by the employees along the gas lines, not only to their company, but to their specific job of maintaining a continuous supply of gas, at all times and in proper quantities to meet the public demand.

### Production and Transportation System

Let us visualize then these lines and, briefly, the entire system from an operating standpoint, so as to more readily perceive the nature of the duties which call for this specialized loyalty.

First: The gas wells scattered among the hills, in most cases several miles from any town, these wells bored into the earth with a string of drilling tools to a depth of several thousand feet; the diameter of the hole at the top being not more than sixteen inches, and gradually but slowly narrowing as the hole becomes deeper. The average depth is about one-half mile, although some wells have been drilled to a depth of more than 7,000 feet—a few to much greater depths. One well was drilled to a depth of 10,585 feet, or more than two miles below the floor of the derrick, and in 1935 a well was completed to a depth of 12,786 feet. This well was completed without a lost-time accident and at no time did the hole vary more than three degrees from the perpendicular. Incidentally, the well was non-productive. From the producing sand or sands (if productive) the gas is obtained.

Second: The gathering lines ranging in size from two to twelve inches, which carry the gas from the wells to the Transmission Lines.

Third: Field Measuring Stations for ascertaining the amount of gas carried through the lines.

Fourth: Compressing Stations, where the gas is compressed to smaller volume and higher pressure so that it will flow through the pipe lines.

Fifth: The Transmission Lines, ranging from six inches to twenty-six inches in diameter, to transport the gas from the fields, through the compressing stations and on to the gates of the city for distribution to the industrial and domestic consumers. These lines are usually many miles long. Recently two lines, each almost 1,000 miles long, and 24 inches in diameter, have been laid from the producing areas to the points of market.

Sixth: The City-Gate Measuring Stations, where large meters measure the gas, and where gas regulators reduce the high and variable pressures carried in the transmission lines to the lower and more constant pressure necessary for the medium and low pressure lines which lie under city streets and alleys. From these distribution or low pressure lines the gas is conducted into the homes ready for use. During this travel, which is at an average speed of from five to twenty miles an hour, the gas is reduced from pressures of two or three hundred pounds in the transmission lines to as low as eight ounces in the low pressure lines.

Let us add the picture of natural gas in terms of tonnage. One thousand cubic feet of natural gas weighs, roughly, 50 pounds, so that if the needs of a city on a severe winter day necessitate the delivery of 150,000,000 cu.ft. through the pipe lines, it is equivalent to approximately 3,750 tons.

### Line Patrol and Maintenance

Such a system, of necessity, requires the services of a great number of men and involves a multiplicity of duties, too lengthy for description in this article. It should be noted, however, that all of the pipe lines are buried, the smaller ones under about two feet of earth, and the larger lines, carrying high pressures, covered with three or four feet of earth. Valves, extending above ground, are located at proper places in the lines, and at important junction points, by the opening and closing of which valves the gas may be switched from one line to another or from one city to another. These valves are used for balancing of pressures and distribution, because if the gates were all open, the gas would flow

in all directions, or in any direction, so that some points of market would be oversupplied while others would not have enough volume or pressure, and the general system would be somewhat out of balance.

The patrolling of this net work of buried lines, carrying high pressures, therefore, requires men of courage and fortitude, guarding against leaks, breaks, or frozen lines, which must, in every case, be repaired immediately. After the wells have once been turned into the lines, these men must maintain a constant vigil, watching over the entire system, releasing the water from the lines and blowing the drips which accumulate water much faster in the gas line system during a cold period when the pressure is low and a hard pull is being made on the wells, than at other times. Where lines are frozen, they must be dug up and thawed out, which operation, under the safest working conditions, is a very hazardous one and has often resulted in fatal accidents. This work is not always done during daylight, the men often being required to work all night long in order to free the lines of water and ice and repair breaks and leaks in the pipe line system, which are likely to occur more frequently during cold weather.

### Anticipating and Meeting Demand

The transmission lines and the distribution system at all times stand full and are packed with gas so that this fuel will be available when the valve is turned either day or night. The pipe line capacity, however, is a very small part of the volume needed to supply the twenty-four hour demand, and the only method of storage is to let the gas stay in the wells until needed in spite of the ever present risk of the gas migrating to the wells of competitors or being lost in the producing sands for other reasons.

Now, what happens when word is received from the United States Weather Bureau that temperatures are expected to drop to zero or below in the following twenty-four hours and that a thirty to forty mile an hour gale will rattle the windows and pile the snow in drifts across the highways? Let us assume that for a week or ten days the Weather Bureau has reported no cold weather in sight, the thermometer ranging over the period from a low of thirty-two degrees in the early morning hours to forty-five degrees in the early afternoon. Then, about 10:00 o'clock in the morning comes the weather man's report that a cold wave is approaching from the northwest

and will be general in less than fifteen hours.

The Chief Dispatcher, whose duty it is to adjust the supply to the demand over the whole system, glances at the records in front of him and notes that the gates at over a thousand of his own 4,500 wells are open, thus permitting free delivery of their gas to the main line. He also notes that the several thousand wells of producers, from whom gas is purchased, are delivering, steadily, their regular daily quota.

Anticipating the need of an increased supply of gas, he orders the gates opened at possibly 500 wells not then feeding. In a few hours the cold wave strikes and several hundred thousand customers open the gas valves of their space heaters or stoves. Automatically the thermostatic controls on thousands of gas furnaces release increased volumes of gas to the burners in order to maintain the required seventy degrees temperature in as many homes. Gas-fired heating units in the stores, apartments, and office buildings in the large cities draw increased volumes from the nearest street main. This rapidly increasing demand is always in addition to the normal cooking and industrial load.

From these points of large consumption word is flashed to the Chief Dispatcher that pressures in the trunk lines leading into the cities are falling below the normal pressure required for proper distribution. Up to this time only about half of the total number of large compressing units at the various stations are in operation. He immediately orders additional compressor units started at the stations nearest the points of consumption, with the result that increased volumes of gas are forced at high speed to consumers in the low temperature sections. To feed the enormous compressor

units just started, additional volumes of gas are necessary, and throughout the whole system compressors running are speeded up or additional units turned on, these units, in turn, reducing the suction pressure against which the wells themselves are feeding and thus enabling the wells to deliver in increased volumes. As the cold wave spreads, large numbers of men hurry into the hills to turn in additional reserve wells as ordered by the Chief Dispatcher. By the following morning, with the main compressing station and the supporting booster stations running almost to capacity, and the gates at almost every available well wide open, pressures are being maintained and the supply has been adjusted to the demands of possibly one million consumers.

Every hour the Superintendent of Compressing Stations receives a report showing, in detail, the previous hour's operation of every compressing unit under his control, together with the pressures being maintained on both the suction and discharge side of every trunk line in the system. Consequently, he is, at a moment's notice, ready to send a trunk line crew to replace or repair any section of the hundreds of miles of main arteries that for any one of a good many reasons might need immediate attention. The City Plant Superintendents in the low pressure distribution areas just as anxiously watch the regulators at the city gates as long as the cold spell continues.

In a day or two the weather has returned to normal and exactly the opposite procedure is followed. As the pressure rises at the city limits, the large engines in the nearest compressing stations are caused to slow down or are shut off entirely, the booster station supplying them with gas

from the wells cease to pump, and the well crews return to the hills to shut in the wells.

Often the predicted cold wave does not materialize. Preparations are completed and the gas made ready for market only to find that because of some strange atmospheric condition, the cold wave did not strike the expected territory, but was diverted north across the Canadian border or spent its fury as it drifted over the warmer southern states. Again the men hurry into the hills to shut off the supply they know will not be needed. These men are, in every sense of the word, guardians of our comfort. Away down along the lines into the heart of the natural gas field man toils in order that the natural gas flow may be continuous and uninterrupted. These field men are on duty day and night doing work exceedingly hazardous, yet essentially, a part of the system of delivery of natural gas.

Typical of such hazards, the following is quoted from a bulletin by the Safety Director of one of the natural gas companies:

*"The How and Why of  
Lost-Time Injuries"*

"A Well Tender received instructions to turn several wells into the line. These instructions were received late in the afternoon of January 22, the date of the recent severe blizzard, and the Well Tender started on the rounds of his wells.

This terrible storm closely followed a brief period of pleasant and sunshiny weather, breaking with a sudden fury which caught many of us without proper protection. This Well Tender had to walk a distance of about twenty miles to and from the wells he had to turn into the line. Darkness fell before he had reached the last well, and it was not long until he began to suffer with the cold. Then, losing his direction in the blinding snowstorm, he decided to crawl into a haystack, but back in the still unclouded recesses of his brain sounded the warning that should he once permit himself to fall asleep, he would never wake again. He continued on, falling, and crawling on his hands and knees at times, but always clinging to the determination to keep moving.

When he had finally turned the last well into the line and started the return journey, he not only had difficulty in keeping the freezing numbness out of his legs and feet, but had to stumble and feel his way round in the darkness to keep from straying from the pathway and getting hopelessly lost in the storm.

At midnight he reached home, more dead than alive. His feet and legs, his finger tips, and his right ear were badly frozen. The physician who examined him offered but slight encouragement that it would be possible to save his feet and right ear. He was kept under constant care and observation, and eight days after the storm came the first real assurance that his feet would be spared and that he will eventually, recover completely. Every employee of the company rejoiced that this near tragedy was to have such a happy ending, and we are extremely thankful that but one employee,

(Continued on page 284)

## Past President Young Endorses Accounting Luncheon Meetings



P. S. Young

**L**UNCHEON CONFERENCES, started in 1934 to provide persons attending the annual convention with an opportunity to discuss informally their collection, customer relations, customer accounting, and general accounting problems, have become a valuable addition to the work of the Accounting Section. It has been my pleasure to sit in at one of these meetings, and to note the scope and evident value of the discussion. All persons interested in subjects covered by the Accounting Section should seize the opportunity to attend these interesting, well planned, and constructive meetings.

I am glad to endorse the good purpose back of these Luncheon Conferences, and to recommend attendance at the meetings.

P. S. YOUNG,

Vice-President in Charge of Finance, Public Service  
Electric and Gas Co., Newark, New Jersey

## Commercial Section

F. M. Banks, Chairman

J. W. West, Jr., Secretary

Hugh Cuthrell, Vice-Chairman

# The Development Phases of the Gas Range of Tomorrow



W. S. Walker

**B**EFORE considering the development phases of gas ranges it would be well to consider briefly just what the public wants in a cooking appliance and make an honest and frank analysis of how well gas ranges meet such requirements and how they compare with electric ranges

in these respects. This will guide us in deciding where effort should be made in range improvement. This is not a pep talk but a serious statement of some of the things about gas ranges which give us cause for concern. Some of the things I shall say are not pleasant for the gas man to hear.

### Modernity Important

The most obvious want of the purchaser is that the range be modern. He usually knows very little about the mechanical parts of any device but if he can be convinced that it represents the last word in modern design it is acceptable. This customer psychology accounts for the success of such ideas as "streamlining." We now have the word "streamline" applied to almost everything and incidentally this is more for the purpose of catching the public fancy than for its utility value. This illustrates the need for conducting our research and development work in such a way as to give the advertising people something around which to build a story of modernity.

Such things as speed, flexibility and uniform temperature in an oven are certainly appreciated by the user. Ovens of the best gas ranges maintain ideal temperature and atmosphere conditions for baking and roasting and are very flexible for increasing and decreasing temperatures. They will also maintain temperatures which are as low as can be desired. There is nothing which can be done better in an electric oven than can be done in one of the new gas ovens. Yet I have heard it said in many instances that owners of electric ranges comment most fa-

By W. S. WALKER

Consolidated Edison Co. of New York

vorably upon the wonderful oven performance and the superiority over gas in this respect. The reason for this is that these people had never used a real good gas range.

There is still inherently much room for improvement in gas range ovens. I know of several instances where experimental ovens have been built which would heat up about twice as rapidly as the very best oven available today and would maintain a given temperature on about half the gas required by the best ovens which are now available. Considerable research is necessary to obtain results equal to this in practice. It is also essential that we obtain satisfactory acceptance of the better ranges we have today before we can expect much further technical improvement in ovens.

### Gas Ranges Faster

In relation to top burners, most owners of electric ranges, I am told, will admit that they are slower than gas and that this is quite a disadvantage for boiling operations and quick breakfasts. Gas burners certainly have an advantage here in both speed and flexibility and they require no special utensils in order to obtain optimum performance. Yet there is still room for top burner improvement. They can be made more efficient and their speed can be increased.

Electric range broilers give more uniform temperature and are more satisfactory generally for short operations, such as toasting and sandwich making, but for heavy broiling operations the new radiant gas broilers are undoubtedly better. The public acceptance of radiant broilers has been poor and I think we should look into the reasons for this poor acceptance. Further research work should be done on broilers if we are not to be put at a decided disadvantage in this respect.

What about the convenience of a gas range compared with an electric range? It is fair to say that the convenience of the two are just about the same, provided a gas range has automatic lighting on all burners. If a match must be used, the gas range is at a decided disadvantage. Fortunately, we have reached a point in

range development where all burners can be provided with automatic lighting with complete confidence that these devices will be satisfactory and will introduce no hazard. A routine cooking operation, whether it be top burner or oven work, can certainly be done with equal ease on either kind of range except for the longer time required by the electric range. Convenience factors such as the location of the utility drawer or the broiler compartment vary with different ranges and the gas range is usually at a decided advantage.

### Cleanliness

What about cleanliness? This has often been cited as a fundamental weakness of the gas range. But let us analyze this claim. There is little, if any, difference in the ease with which the two kinds of ranges can be kept clean. In the case of some makes, the top burners of gas ranges can be cleaned more easily and in other makes the electric elements are more easily cleaned, but there can certainly be no criticism of the better gas ranges in this respect. Electric ranges are often made to fit flush against the rear wall which eliminates an unsightly space behind the range and one which is difficult to keep clean. Within the last few months, however, construction of gas ranges to fit against the wall has been introduced on some gas ranges and it should be encouraged. There is no technical difficulty in the way of adopting this method of construction on all ranges.

Claims have been made that gas ranges smudge and discolor the kitchen walls. Yet no one has been able to explain why the small quantity of combustion products, namely, carbon dioxide and water vapor could do this. The truth is that the vapors driven off of the food during the cooking operations, added to the natural tendency of the heated air around the range to rise, is responsible for kitchen wall discoloration and it is entirely independent of the fuel used so long as the amount of heat is the same. The truth of this statement, of course, is dependent upon the range having an effective deflector on the oven outlet to direct vapors leaving the oven away from the wall. The water vapor and carbon dioxide are certainly not injurious to health in the small quantities being considered. In fact the addition of water vapor in winter is con-



sidered healthful and the minute amount of carbon dioxide could never be more than a mere fraction of that administered to people in certain types of illness to stimulate respiration. Two persons in normal respiration will breathe out 40 cubic feet of carbon dioxide each day. The combustion of 70 cubic feet of gas, which is a fair amount for a day's cooking, will only generate 35 cubic feet.

Another alleged weakness of the gas range is that it heats the kitchen. Assuming this is true, it is only a disadvantage for about four months of the year and is an advantage at other times. If all of the present gas range ovens were effectively insulated, hot kitchens would not be a vulnerable point. The old uninsulated ranges do radiate a tremendous amount of heat at the body level and are very uncomfortable in warm weather. The well insulated gas ranges, however, are very satisfactory in this respect and give off no more heat than an electric range except through the oven vent, where it creates a minimum of discomfort, especially in a reasonably well ventilated kitchen. If gas ranges were generally better insulated, particularly around the door and frame, we would be on a sound competitive basis, regarding this claim, but unfortunately it appears from the limited information at hand that electric ranges are generally far better insulated than gas ranges.

#### *Complete Venting Urged*

In order to completely refute the competitor's claims of kitchen heating and air vitiation, a complete venting of all products of combustion is necessary. For the reasons cited, however, I believe that there is so little need for this that it is useless to consider and that future design work should be directed along lines of completely eliminating all flue connections on ranges of ordinary domestic size. Since venting the oven only takes care of one third or less of the burnt gas and cooking odors, the sensible solution is to place a neat hood, having mechanical exhaust, over the entire range for those customers who can afford the best. You may be surprised to learn that electric range manufacturers are coming to this. A model kitchen featured in advertising in "Electric Light and Power" for June showed such a hood over an ordinary electric range in a residence kitchen.

Operating costs depend upon the rates available in the locality under consideration. This cost is usually decidedly in favor of the gas range, particularly if the same method of cooking is employed in both cases. So called waterless cooking, deep well cooking and the whole meal oven cooking, make for greater economy in fuel consumption. These methods of cooking were largely developed for the purpose of making it possible to do cooking at less cost where premium fuels are involved. It has been mentioned, how-

ever, that there is room for considerable improvement in the efficiency of gas ranges. This will result in still greater margins of economy over competitors.

There is little to be desired in gas range appearance and the reason they have developed so satisfactorily in this respect is that appearance, in the past, has been the principal influencing factor with the purchaser.

Here I have only compared the very best present-day gas ranges with electric ranges. If the average gas range, which is being sold today, were used in the comparison, the showing would be much less satisfactory.

Within the last few years, the development of gas ranges from a technical viewpoint has been very satisfactory, but technical development should be further encouraged in every possible way because, regardless of any temporary advantage that we or our competitors may gain through advertising, the ultimate outcome is going to depend upon the user of the range, whose opinion will be based upon performance and the overall satisfaction received.

#### *Technical Progress*

There was adequate evidence of technical progress at the last Appliance Exhibit in connection with the A.G.A. Convention. Nearly all of the leading manufacturers showed models having ovens which would heat to 500° in less than ten minutes. This is about twice the speed which was considered satisfactory in years past. Accompanying these improvements in speed were other design improvements which made it possible to maintain temperatures as low as 250°. These same ovens use less gas, which is a factor in reducing kitchen heating, and lowering operating costs. There are at least four different makes of safety oven lighting devices now, which are entirely dependable. Top burner efficiencies have been increased in many cases to 45% or more, which is an improvement of about 30% over efficiencies of a few years ago.

The broiler has also been improved so that it heats up very rapidly and gives intense radiant heat. Many ranges are equipped with a separate broiler compartment for added convenience. These advances are largely a result of a concerted effort on the part of the industry starting a few years ago to make improvements. Both the manufacturers and the utilities have contributed to this and the work was coordinated and centralized through the A.G.A. Committee for Domestic Appliance Research, which was organized in 1935. We may continue to expect improvements from the manufacturers if we can make a satisfactory sales showing on the new ranges, as they are developed. But research work and factory changes which are necessary in getting into production on new models involves tremen-

dous expense which must be balanced by income from sales.

The situation at the present moment is one of having ranges available, which are about all one could expect, but the sales volume of these better ranges has not been satisfactory. Reasons for this are that we are too often inclined to promote the lower price merchandise because it is easier to sell. We have not found a satisfactory way of showing the customer the worthwhile differences between a \$75.00 range and a \$150.00 range. Another difficulty is that price is not always a measure of the true value of a range. During the last few years, our laboratory has made comparative tests on twenty-six ranges and the differences in such things as time of oven heating, gas required to maintain temperature, boiler speed, etc., on ranges in the same price class were very enlightening.

During the last few months those people in the industry who are responsible for sales have been looking for some means through which united action might be taken in getting greater public appreciation and acceptance of the better ranges. Consideration has been given to the idea of grading ranges according to their quality into several groups. The difficulties with this are that grading alone does not tell the purchaser enough. There are also the questions of who would do the grading and how a manufacturer could be persuaded to pay for having his range given a low grade. Also, some organizations have set themselves up as graders of consumers' goods who are not now in the best standing.

#### *Super Range Plan*

There is a plan under consideration, however, which seems to have considerable promise. It is being considered by groups, both in the A.G.A. and in the Appliance and Equipment Manufacturers' Association, and a special committee has been formed under the chairmanship of Hugh Cuthrell to devise a practical means of applying it. Various phases of the plan are still in formative stages and it can, therefore, only be treated generally here. It consists of preparing a group of very simple brief specifications relating to the convenience, efficiency and performance of ranges. They are written from the commercial man's viewpoint and the value of each specification should be readily appreciated by the purchaser of a range. They have been written so that a limited number of the very best ranges today can meet them. This being true, no further technical work will be necessary in order to put the plan into operation. In the opinion of those who have worked on the list of tentative specifications it represents all of the most desirable qualities of a range with the exception of those things on which the A.G.A. laboratory already maintains very high standards; namely, safety, durability, uniform



oven temperature, etc.\* The first twenty-five items on the list are required specifications while the second list of eight items are desirable optional features. A range which will meet all of these required specifications will be designated by some appropriate name. Names which have been proposed are:

"Super Range"  
"Certified Performance Range"  
"Superior Service Range"

You may be assured that such a range will give a high degree of satisfaction to the user.

Various proposals have been made as to who would certify that ranges meet these specifications. It had been suggested that it be left to the manufacturers, or that it be done in utility laboratories, but it probably can be done most easily in the A.G.A. Laboratory at the time the range is submitted for the blue star seal of approval. This should involve very little additional work or expense, since most of these specifications closely parallel the present approval requirements. There are many advantages which can accrue from this plan:

1. It should give us a medium through which we can effectively advertise and sell the idea of better gas ranges.
2. It should offer an incentive to every manufacturer to build one or more lines of ranges meeting these specifications.
3. The ultimate result would be better ranges getting into the hands of the user.

#### Relation to Approval Program

The question might very well be asked as to what is the relationship between this program and the A.G.A. approval requirements. The answer is that they are independent and distinct from each other, with the exception that ranges may be tested for both specifications at one time. This program would not detract in the least from the A.G.A. program. The purposes of the A.G.A. tests are to assure that a range be absolutely safe and that it meets minimum requirements as to satisfactory performance and durability. With the exception of safety requirements, the A.G.A. tests have been set at a level far below the maximum obtainable. Had not this been done originally, and had it not been continued, its purpose would have been defeated, because the industry is not well enough organized to prohibit the sale of ranges which are not A. G. A. approved.

There has been one obstacle in the way of gas range improvement on which I think it is well to sound a note of warning. Whenever a group of people get together and formulate plans on ranges, there is often such a divergence of opinions and unwillingness to compromise, that little, if anything, is accomplished. People have argued for hours over the merits of the table top versus the cabinet range. We now see who was right. The

table top range had gained far greater acceptance because of its neat appearance and convenience as a working space. There will no doubt continue to be the same lack of agreement in discussing such features as the merits of automatic oven lighting and other things.

We would do well to look back over the procedure followed by the automobile industry in their developments. When the self starter was advanced sufficiently, it was made standard equipment on all cars of a given make. Other improve-

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## N. Y.-N. J. Regional Conference Outlines Gas Sales Responsibilities



B. A. Seiple

dred delegates who discussed the various sales problems confronting the gas industry. B. A. Seiple, Jersey Central Power & Light Company, chairman of the conference, presided at the opening session.

Following the greetings and address to the delegates by E. P. Prezzano, president, Westchester Lighting Company, the keynote address was delivered by Herman Russell, president, American Gas Association, and president, Rochester Gas and Electric Corp. In a vigorous presentation buttressed by facts and figures based largely on a study of Rochester which has been made over a period of months, Mr. Russell outlined the sales responsibilities of a combination gas and electric company.

#### Combination Company Study

The results of these studies have shown, Mr. Russell concluded, "that with most combination companies in nearly all sections, it is in the customers' and the company's interest to retain and promote the gas cooking, water heating and refrigeration load. That straight gas companies must meet competition and aggressively campaign for the domestic fuel load, confident that the business is logically theirs." Mr. Russell's remarks were the highlight of the meeting which was outstanding in the caliber of papers presented. A special distribution of the full text will be made by the Association.

Taking up the sales challenge which lately has been directed at Home Service, Elizabeth Sweeney, chairman of the Home Service Committee, presented a logical and forceful brief on behalf of the effectiveness of Home Service work. "The three aims of Home Service—to increase good pub-

lic relations, to increase the sale of gas appliances, and to increase the sale of gas—have never changed," she said. However, she brought out, the emphasis has shifted to the sales and load building assistance Home Service can render. Pointing to the new selling technique which sells "advantages" instead of "things," Miss Sweeney asks if any arm of the industry is "better prepared than is Home Service to sell the advantages of gas cooking, gas refrigeration and gas water-heating."

The Thursday morning session closed with a highly interesting and inspirational address by Dr. Daniel Starch, of Daniel Starch & Staff, New York, under the cryptic title, "Let Us Go Against the Macedonians." Dr. Starch urged less talking and more action on the sales front.

The evening session, with W. J. Schmidt, Long Island Lighting Co., vice-chairman of the conference, presiding, was devoted to the following three papers: "Merchandising Today," William Seely, president, American Colortype & Osborne Cos., New York; "Building a Sale," Frank Lyons, Frigidaire Corp., Dayton; and "Effective Methods of Advertising and Promoting Equipment Sales," John McQuig, Geyer, Cornell & Newell, Inc., New York.

A panel discussion of sales plans and results conducted by Chairman Seiple occupied the Friday morning session. Those participating were: H. E. Dexter, Central Hudson Gas & Electric Corp.; F. M. Houston, Rochester Gas & Electric Corp.; W. F. Moses, The Utility Management Corp.; George Ostlund, Consolidated Edison Co. of N. Y.; J. P. Hanlan, Public Service Electric & Gas Co.; G. F. B. Owens, The Brooklyn Union Gas Company.

R. A. Koehler, Public Service Electric & Gas Co., presided at the final session, which included the following papers: "The Gas Range of Tomorrow," Paul Dorsey, Cribben & Sexton Co.; "Development Phases of the Gas Range of Tomorrow," W. S. Walker, Consolidated Edison Co. of N. Y.; "Why Water Heating," A. G. Blake, Ruud Manufacturing Co.; and "Economics of Gas House Heating," Leo Loeb, Loeb & Shaw, Inc., New York.

\* Since the list of specifications is very tentative, it has not been included here—Editor.

## Diversified Home Service Activities Outlined at Conference and Training Course

**A**T the Home Service Conference and Training Course in Cleveland the week of June 13, a large registration was rewarded by hearing a fine group of papers depicting every phase of Home Service operation carried on in the gas industry today. Thirty-three speakers contributed to the program,—from California, Washington, Texas, Oklahoma, Michigan, Illinois, New England, New Jersey,—as well as the New York and Ohio areas. The attendance also represented these states and in addition North Carolina, Virginia, Tennessee, Missouri, Montana, North Dakota and Minnesota.

The American Gas Association Testing Laboratory was in its best festive clothes for the meetings. Excellent exhibits by manufacturers added to the success of the course, especially two Whitehead kitchen displays and a beautiful model basement designed by American Gas Products and the Bryant Heater Company.

Elizabeth Sweeney, as chairman of the Home Service Committee, presided most efficiently at all of the sessions. In her opening remarks Miss Sweeney outlined the reason for giving the course. It came about, she said, at the request of educators who maintained that a course of this character would give much assistance in picturing just what home service work involved.



Elizabeth Sweeney

The course was also open to home service directors in the gas industry and at the close of the conference everyone present placed emphasis on the value of such a course. With a registration of 151, including 26 representatives of 14 colleges, the course reached a representative group of those interested in Home Service.

Keynote of the meeting was set by Hall M. Henry, vice-president, Utility Management Corp., New York, in an address entitled, "There's Nothing Like Gas." Mr. Hall forcefully outlined the story of competition facing the industry, but left no doubt in the minds of his audience that gas was the fuel of future for cooking, refrigeration, water heating and house heating.

### "Model" Demonstration

Home Service in its new role of direct selling aid was a secondary theme of the conference. One means of presenting sales-slanted information being utilized by Home Service today is that of injecting drama into cooking demonstrations. In this connection, Margaret Nevins, The Syracuse Lighting Co. Inc., presented a truly "model" demonstration in one of the working kitchens on display.

The second big phase of Home Service work,—Home Calls—was presented in three parts. First, a skit typifying a call in a home following the sale of a new range and refrigerator was presented by Hulda Ungericht and Dolly Deeds of the Ohio Fuel Gas Company. Mildred Bailey, Public Service Electric and Gas Company of New Jersey, then outlined the different types of home calls giving reasons for their

use. Mattie Rouse of the Consumers Power Company of Michigan described some techniques in home call practice and thoroughly "sold" the group on the benefits of a home call kit.

Kitchen planning occupied a morning's session and was led off by the well-known authority, Harry Swenson of The Peoples Gas Light and Coke Company of Chicago. Mr. Swenson outlined the purposes of kitchen planning work and gave many helpful suggestions as to how the work could be carried on by home service women.

Mable Claire Atwood of Grand Rapids supplemented this discussion with a description of the way this plan had worked in the model gas home built by the Grand Rapids Gas Light Company, Grand Rapids, Mich. There followed a group of four short talks in which kitchen planning in four companies was described by Beatrice Cole Wagner, The Philadelphia Gas Works Company; Helen Smith, Rochester Gas and Electric Corp.; Albertine Berry, Lone Star Gas Company, Dallas, Texas; and Margaret Nevins of Syracuse. Announcement was made of the availability of the third edition of the A. G. A. book, "Modern Kitchens and Basements."

"Home Service Today" was the subject presented by Jessie McQueen, A. G. A. Home Service Counsellor. Miss McQueen described the characteristics of Home Service work, the type of people needed for it, the acceptance given to the work by Association executives in attendance at all regional meetings and the types of courses which could best prepare students in colleges, who desired to become home service directors. After stating that the major ac-



Annual Home Service Conference and Training Course at the A. G. A. Testing Laboratory, Cleveland

tivities were home calls and lecture demonstrations, she listed special activities which were equally important in making Home Service reach as wide a group of customers as possible.

Additional activities were outlined in a series of papers as follows: "Women's Club Activities at Company Quarters" were discussed by Mrs. Beatrice Strege of the Seattle Gas Company. Helen Kirtland of the New York State Electric and Gas Corporation at Geneva described the important activity of "Classes for Employees." "Classes for Juniors" by Helen Bates of the Consumers' Gas Company, Toronto, Canada, outlined their particular success with this subject as well as that carried on by other companies. "Radio programs" were explained by Karen Fladoes, of The Peoples Gas Light & Coke Company of Chicago, and "Home Service in the News" was of interest to the group as described by Beatrice Cole Wagner of Philadelphia.

#### *Describe Activities*

Cornelia Newton, New Haven Gas Light Company, representing the New England group, outlined the place of Home Service in sales floor activities, and Mildred Clark of the Oklahoma Natural Gas Company of Tulsa, as Chairman of the Southern-Southwestern Group of Home Service Directors, featured the importance of Home Service Records, illustrating with the plan used in her own organization as well as that of other companies in the south.

The Pacific Coast Regional Chairman, Gladys Price, of the Southern California Gas Company of Los Angeles, outlined the many activities on the West Coast, stressing their particular success with Trade-Dealer cooperation. Miss Price also described the assistance given by demonstration and instruction to teachers of foods work in the Los Angeles public schools following the installation of 500 modern gas ranges in those schools last year.

Travelling Cooking Schools, a new trend in Home Service work carried on successfully through the extensive properties of the Ohio Fuel Gas Company, was described by its sponsor Hulda Ungericht.

Gas equipment in all its modern aspects was another important division in this Con-

ference program. The Modern Gas Range was dealt with by W. M. Couzens, research director of the A. G. A. Testing Laboratory. This was followed by a complete explanation of thermostats and automatic devices by Dr. F. E. Vandaveer, supervisor of the A. G. A. Testing Laboratory. "Factors Governing Baking Results in Gas Ranges" was of intense interest as presented to the group by Dorothy Shank of the American Stove Company, who illustrated her talk with an exhibit of baked products.

The Gas Refrigeration story gave a new and informative presentation of the Electrolux cycle by Leone Waddell, assistant home economics director of Servel, Inc. "Home Service Can Talk Water Heating" was the subject presented by Flora Dowler

of the Binghamton Gas Works Company, Binghamton, New York, and house heating received attention in two talks; one by D. K. Smith, Rochester Gas & Electric Corporation, describing the simple operation of this equipment, and the other by Henrietta Betlam of the Betlam Heating Company, Rochester, who told how easy it was for a woman to sell house heating and air conditioning.

In a presentation, "Home Service Asks Its Questions," Helen Smith of the Rochester Gas and Electric Corporation described the results of a survey conducted by home service directors in all sections of the country. Five questions were asked a group of 1,000 women, among which were: Do women like their new gas ranges? What

(Continued on page 284)

*Miss Margaret Nevins, Syracuse Lighting Company, is shown preparing a model demonstration.*



*Some of the gas appliance accessories and controls on display at the home service conference.*



*Model gas basement display at the home service conference*



*Model gas kitchen on display at the conference*



## Industrial Gas Section

Ralph L. Manier, Chairman

Eugene D. Milener, Secretary

Hale A. Clark, Vice-Chairman

# Industrial Men Show Enthusiasm over Recent Gas Fuel Attainments

**E**NTHUSIASM over the many successful industrial gas applications resulting from recent research and development was reflected in a number of highly interesting papers, at the National Conference on Industrial Gas Sales held in Chicago, June 8-9. Sponsored jointly by the Industrial Gas Section, Ralph L. Manier, Niagara Hudson Power Company, Chairman and the Midwest Industrial Gas Sales Council with Lawrence R. Foote, Central Illinois Electric and Gas Company, Chairman, the conference marked another highlight in the series of Industrial Gas Section meetings held this year.

The Tuesday morning session was opened with Mr. Manier presiding, and a warm welcome was extended to the attending delegates by F. X. Mettenet, vice-president,



C. B. Phillips, Surface Combustion Corp., and C. W. Gale, Knoxville Gas Co., past chairman of the Industrial Gas Section

are under construction along with eight continuous furnaces."

Describing the box-type furnace used in his own plant for laboratory control he went on to say, "The maximum gas consumption is 750 cu.ft. per hour (1,050 B.t.u.) and it has now been in constant use for 14 months. Consumption figures are of no importance since there is no uniformity of loads, ware burned, etc., but at a 48-cent gas rate for natural gas its operating cost averages \$75 per month. More than three dozen technicians use it and each requires varying, but accurate temperatures from 1250° F. to 1650° F."

Lively discussion as to the merits of insulating firebrick with this type of furnace followed. While Mr. Markert made the point that the removal of the insulating



Left—Managing Committee of the Industrial Gas Section, Ralph Manier, chairman, listening to Emil Hofsoos, agency representative, discuss next year's industrial gas advertising plans. Right—Process and Comfort Air Conditioning Committee during the meeting at the conference. Left to right: C. A. McKinney, Harold McGrath, W. E. Stark, L. A. Bickel, chairman, C. H. Waring, H. O. Andrew, L. W. Melcher

The Peoples Gas Light and Coke Company, Chicago.

"Application of Gas Radiant Tubes to an Enameling Furnace" was the title of a paper by George W. Parker, Mississippi River Fuel Co., who described the installation at the National Enameling and Stamping Company plant at Granite City, Illinois. This is a conversion job as the furnace was heated with electric elements prior to the installation of gas radiant tubes. Now in operation for a year, savings in fuel costs over electricity total \$20,000. This was accomplished with natural gas at 30 cents per 1,000 cu.ft. and electricity at one cent per kw.hr. In the same period production increased 20%. Furthermore, the ware is better dried and there is a smaller temperature differential between the top and bottom of the furnace. These gas radiant

tubes react quickly to any change in heat input, and, in changing from light to heavy ware, the heat is built up much more rapidly than was the case with the electrical elements.

Valuable operating data were contained in a paper entitled "Application of Gas Radiant Tubes to Batch-Type Enameling Furnaces" by F. S. Markert, Ferro Enamel Corporation. In opening, Mr. Markert stated: "It has now been approximately two years since the installation of the first gas radiant tube conversion of a batch-type porcelain enameling furnace, under the sponsorship of the Committee on Industrial Gas Research of the American Gas Association." Later, he said, "Including the initial trial unit, there are operating today six batch-type tube furnaces and six more

firebrick gave the furnace a smaller temperature drop and a quicker comeback, Mr. Foote stated that his experience was to the contrary. When the insulating firebrick was removed from the side walls of a furnace in his territory there was no appreciable difference in comeback, he said. A quicker comeback was effected, however, by decreasing the weight and mass of the charging tools.

The question of sharp bends in gas radiant tubes used with manufactured gas with short flames was brought up, and L. M. Lindsey of Surface Combustion Corp., stated that the curvatures in more recent designs had been increased. Laurence E. Wagner, Providence Gas Co., wanted to know if these tubes could be fired with oil, to which Mr. Lindsey answered in the affirmative. He stated, however, that his



company did not recommend this fuel when gas was available, as oil was more severe in its action on the tubes. This statement was concurred in by Mr. Markert.

The paper, "Application of Gas Radiant Tubes to Galvanizing Furnaces," presented by A. M. Thurston, The East Ohio Gas Co., Cleveland, was a detailed description of a recent installation at the plant of the National Telephone and Supply Co. of that city. One of the outstanding achievements of this furnace is the delivering of a large portion of the heat to the upper third of the pot where the cold work is immersed and surface radiation heat losses are great. Vertical radiant gas tubes (20 in number) with blast-type gas burners firing from the top down, are used, and automatic temperature control is a part of the combustion equipment. The installation is a jobbing pot employed for galvanizing miscellaneous stampings, forgings and castings varying in weight from one-half ounce to 15 pounds.

Discussion participated in by L. E. Biemiller, Consolidated Gas Electric Light and Power Company of Baltimore, Frank T. Rainey, Ohio Fuel Gas Co., and Wirt Kimball, Cambridge Gas Light Co., brought out that while the installation cost of the gas radiant tube galvanizing furnace might be higher than the flame impact type, this was thought to be more than offset by the increased pot life. The life of the gas radiant tube is yet a mystery inasmuch as those in the installation Mr. Thurston de-

scribed have already operated for 15 months and show no signs of failure as yet. Gas radiant tubes on sheet steel annealing boxes have been in use for from two to three years and no failures have been reported to date.

Somewhat of a sensation was created when a short cycle anneal of only 14 hours in a furnace only 60 feet long as against six days formerly with a furnace 400 feet in length was described in a paper "Application of Gas Radiant Tubes to Short Cycle Malleable Annealing Furnaces" by C. H. Martin, Chicago, representing Holcroft and Co., and the Eclipse Fuel Engineering Co. The furnace described is at the plant of the McCormick Malleable Foundry in Chicago. Of the pusher type and using a prepared atmosphere preserved by a vestibule at either end, this furnace anneals 20 net tons daily. The interest excited was more than sustained when the delegates visited the plant the next day and viewed these furnaces at first hand.

There are five zones in the new furnace, and each of these zones is controlled with an automatic temperature controller recorder. The third is the fast cooling zone and is provided with a series of tubes through which cold air is forced by fan. The amount of cold air circulated is automatically controlled by a motor-operated damper actuated from an automatic recorder controller. The furnace is rendered

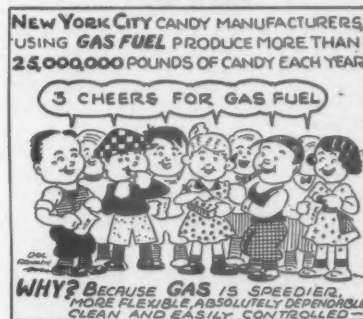
(Continued on next page)

## GOING AHEAD

WITH INDUSTRIAL GAS

We agree with the man who said the new "INDUSTRIAL GAS NEWS" of Consolidated Edison Co. of New York, Inc., is a humdinger. With 51 pictures of installations, snappy cartoons, and good editorial material, the first issue has set a high standard for future issues to meet. The Industrial Gas Section's slogan-chart **THE TREND TODAY IS TO GAS** is on the mast head and we like the way Gas is capitalized throughout the issue.

So-o-o Sweet



One of the New Industrial Gas Cartoons by Consolidated Edison Company of New York, Inc.

## INDUSTRIAL GAS AT WORK



ARTISTIC COLORED DESIGNS ARE LITHOGRAPHED WITH GAS ON MILLIONS OF SHEETS OF TIN FOR MAKING DECORATED CANS AND OTHER CONTAINERS

Everyone got an eyefull on the Industrial Gas Section's Chicago inspection trip. When a 60' malleableizing furnace replaces an old type 400' furnace, that's something for even industrial gas men to "Oh" and "Ah!" about.

What a break it was that no fire had yet been put in the new gas radiant tube enameling furnace at American Stove Company's Harvey Plant. At one time there were 45 men inside the furnace inspecting the 92' radiant tubes.

The strike at Republic Steel was a bad break for the boys on the inspection trip. The thanks of the Industrial Gas Section go to Carnegie-Illinois Steel Company for pinch-hitting. Some mighty fine gas furnaces were seen in action at this mammoth up-to-date plant.

The rain failed to put a damper on the spirits of those on the inspection trip. But a lot of fellows are still trying to figure out why Bill Harris of St. Louis used his umbrella only as a walking stick.

A new peak in enthusiasm was reached when Ralph Wenner of Toledo unfolded his new gas engine scheme at the Industrial Gas Sales Conference. All hands felt he deserved the acclaim that was accorded him.

The June issue of "Air Conditioning Trends," published in conjunction with the magazine "Heating, Piping and Air Conditioning," is devoted entirely to gas summer air conditioning.

partially automatic in operation by the application of a time clock, limit switches, etc.

T. E. Wood, The Manufacturers Light and Heat Co., then stated that there were quite a few gas radiant tube furnaces in the steel mills in his territory as well as a few immersion heated tin pots and pickling solutions tanks, which is another form of gas radiant tube heating. He also told of a gas radiant tube decorating kiln. H. M. Heyn, Surface Combustion Corp., described installations where the hot tubes were placed in a circular position and those where a square design had been achieved with success. He mentioned a job where the comeback time of 6½ hours with electricity had been cut to 1½ hours without decrease in production by substituting gas hot tubes. Mr. Heyn also indicated that the chemical industry offered a fertile field for this type of heating and described some lead pots at one of the DuPont plants. Through the lead thus melted is passed a number of pipes and through these pipes is forced a gas to be reformed by the heat generated.

#### *Sales Psychology*

A searching analysis of the human qualities necessary for sales promotion was presented at a luncheon meeting by Homer J. Buckley, president, Buckley-Dement and Company. Speaking on the subject, "Developing the Right Mental Attitude," he stated that the essential requirements of good sales management direction of any man could be summarized as follows: "Does he possess the right mental attitude to work with people, to make friends, to radiate good cheer, sympathy and kindness, to enthrall and inspire confidence?"

The afternoon session was opened by Lawrence R. Foote as presiding officer who first introduced R. A. Hastings who read a paper prepared by W. A. Darrah, president, Continental Industrial Engineers, Inc. The paper, "Application of Controlled Atmospheres to the Annealing of Copper and Copper Alloys," included a searching exposition of the various actions and reactions during the heating of these metals in various atmospheres and at different temperatures. In discussing the boiling out of zinc from brass when annealing he suggested that "the addition of refined kerosene (sulphur free) appears to protect the surface of the brass from excessive loss of zinc and permits the formation of a fairly clean, bright surface. Formaldehyde, alcohol and, at higher temperatures, methane and ethane will give similar results, the principle being apparently that a sufficiently high temperature must be provided to crack the protecting vapor.

An interesting discussion of atmospheres as applied to ferrous metals was given by William O. Owen, Surface Combustion Corp. His paper entitled, "Design and Operation of Equipment for the Generation of Controlled Atmosphere with Respect to Annealing and Hardening Processes" described a number of installations in various plants.

A plan for procuring a portion of the country's power load was presented by

Ralph S. Wenner, The Ohio Fuel Gas Company, in a paper "Report on Gas Engines for Power Generation."

The focal point of this idea is the triple combination of engine, induction machine and mechanical load. All that is done to an existing installation is to hook up a gas engine and the motor.

#### *Power Generation*

In Mr. Wenner's words, the underlying theory is as follows: "A gas engine and a mechanical load are both connected to an induction motor or what may better be termed an induction machine, since only at certain speeds is its behavior that of a motor. For any such induction machine there is what is known as its synchronous speed. When it operates as a motor it revolves at a speed slightly less than this synchronous speed. The more heavily loaded as a motor, the slower its operating speed, although the lag seldom exceeds 10% of synchronous speed for small motors or 5% for large motors.

"If by the application of power to the motor shaft the motor is caused to rotate at its synchronous speed, it, for all practical purposes, is no longer receiving power from the supply lines. In the case described the gas engine will be driving the mechanical load through the motor as a jack shaft. The motor will be merely idling. If the speed of the system is further increased by increasing the engine speed, the induction machine will become an induction or a synchronous generator. To perform this function it is dependent upon the line voltage for excitation. The voltage and frequency which it generates are exactly the same as that of the supply line, so that it is suitable for use by any other equipment connected to the line. Even in the event that part of it should find its way back through the meter into the neighboring distribution system it could do no harm. We regain only a small amount of power for the purpose of excitation and regulation."

Mr. Wenner made the further point that while Diesel installations could be amortized in three years, the plan presented usually provided amortization in from 12 to 18 months. While this plan has so far been limited to commercial refrigeration and auxiliary power and lighting, it is made to order for summer and commercial air conditioning. Mr. Wenner also stated that "nearly every industrial plant will provide one or more applications, most of them running into sizeable revenue."

A lively discussion followed this paper. Henry O. Loebell, Natural Gas Pipeline Company of America, stated that Mr. Wenner had done a marvelous job and hoped that the industry would recognize and back this development. He thought that contributions like this to the gas industry should be encouraged and at his suggestion a rising vote of thanks was given to Mr. Wenner.

Early Wednesday morning about 70 delegates started out on an all-day inspection trip in buses retained for the occasion. The first stop was at the plant of the Carnegie-Illinois Steel Corp. Due to the great size

of this plant four representative installations were selected, including the 7 two-hole soaking pits at the slab mill which are heated with a mixture of blast furnace and natural gas. The three 30-ton reheating furnaces of the continuous slab mill using straight natural gas were examined and then the 15-ton reheating furnace (natural gas) of the alloy mill. The plant was in full operation and much interest was displayed in the technique of rolling steel plate. Before leaving the six 250 horsepower gas-fired steam boilers were inspected together with the system of controls.

A stop at the George M. Clark Division of the American Stove Company at Harvey, Ill., was the highlight of the trip for one of the most modern gas radiant tube continuous enameling furnaces had just been built ready to be fired. This afforded the delegates an unparalleled opportunity to study one of these furnaces at first hand. It was of the hairpin type and the hot tubes were some of the largest built to date.

The 14-hour short-cycle malleableizing furnace at the International Harvester Co. plant was another attraction of the trip. It was described in Mr. Martin's paper the previous day. The visit to the plant gave the delegates a chance to contrast the small short-cycle furnace with the 400-ft. unit that took 6 days to malleableize.

### **New Directors**

**A.** J. GOEDJEN, division manager and A. C. Carson, chief engineer, both of Green Bay, Wisconsin, have been elected members of the board of directors of the Wisconsin Public Service Corporation, according to J. P. Pulliam, president of the company.

This action follows the plan of increasing the number of directors from five to seven, which was approved by the stockholders at their annual meeting. The new directors were chosen because of their long affiliation with the company in engineering and operating capacities and for their knowledge of the problems affecting the corporation.

### **P. H. Emmet Appointed at Johns Hopkins**

**D.** R. P. H. EMMET has been appointed professor of gas engineering at the school of engineering of Johns Hopkins University, Baltimore, Md. He succeeds Dr. Wilbert J. Huff, resigned, and also has been named professor of chemical engineering at the school.

Dr. Emmet received his degree from Oregon State College and the California Institute of Technology. He has been engaged in research at the Fixed Nitrogen Research Laboratory, Department of Agriculture, Washington, continuously since 1929.

## Technical Section

M. I. Mix, Chairman

H. W. Hartman, Secretary

J. V. Postles, Vice-Chairman

# Proposed Combination of Blue Gas Production and Oil Cracking Process

**STUDIES** were made during the past year of various schemes to determine whether there is a method or process which held promise of materially reducing gas production costs. The following schemes were considered.

1. The complete gasification of gas coal in a carburetted blue gas machine with the recovery of all the volatile constituents liberated from the coal, in the finished gas. With present practice—using gas coal as generator fuel—about 58% of the volatile constituents of the coal is recovered in the finished gas.

2. The preheating of the generator and carburetter air—used in the manufacture of carburetted blue gas—up to 1,000° F. It was believed that this would reduce the amount of generator fuel used.

3. The use of oxygen—

(a) As a substitute for generator and carburetter air in the manufacture of carburetted blue gas.

(b) With steam in a producer gas generator and enriching the resultant gas to the required heating value with butane.

4. The utilization of the heat generated in the manufacture of blue gas in an oil cracking plant—such as used by oil refineries—producing gasoline, coke and oil gas or residuum oil instead of coke.

### Produce Maximum By-Products

As a result of these studies the following conclusions were drawn:

1. That instead of working toward complete gasification of the raw materials used in the manufacture of gas, gas companies should convert their gas plants into chemical plants and produce the maximum amounts of valuable by-products. This appears to have great possibilities of effecting a material reduction in gas production costs.

2. That utilizing the heat generated in the manufacture of blue gas in an oil cracking plant appears to have possibilities of materially reducing gas production costs.

Aside from companies operating coke oven plants—which recover and sell as many by-products as possible—the only gas company in the country that has converted its gas plant into a chemical plant and produces several by-products is the Portland Gas Light Company, Portland, Oregon. This company manufactures a 550 B.t.u. oil gas by the Pacific Coast Oil Gas Process using the cheapest grade of oil available.

Presented before Joint Conference, Production and Chemical Committees, May 24-26, 1937.

By **E. A. DIETERLE**

Consulting Gas Engineer, Chicago, Ill.

and

**LEON J. WILLIEN**

Chief Gas Engineer, Public Utility Engineering and Service Corp., Chicago, Ill.

The lampblack is briquetted and sold for domestic heating. Light oils are recovered from the gas as motor fuel. The tar is refined for road purposes. Recently they have developed a process for recovering sulphur from spent oxide in a marketable form. This company has been operating in this manner for years. It is fair to assume therefore that being in the by-product business must be profitable or they would not continue.

### Combining Blue Gas Operations with Oil Cracking

D. W. Wilson of the M. W. Kellogg Co. presented a paper before the Technical Section at the 1936 A. G. A. Convention on the "Economics of Oil Refining by the Gas Industry." In this paper Mr. Wilson considered the possibility of economic use by the gas industry of some of the methods now employed by the oil industry for the production of materials such as gas oil, suitable for the carburetion of water gas.

The object of this article is a discussion of the possibility of the use by the gas industry of some of the methods now employed by the oil industry for the production of gasoline, residuum oil, petroleum coke and oil gas.

In the manufacture of carburetted blue gas a low heating value producer gas is generated during the blow-period. The heat developed by the combustion of this producer gas is absorbed by the checker bricks in the carburetter and superheater and utilized for cracking the carbureting oil used. The main object in this cracking is to produce a maximum amount of perma-

nent gas and a minimum amount of condensable products such as tar. With present carburetted blue gas operation between 70% and 75% of the B.t.u.'s in the carburetted oil is recovered as permanent oil gas and about 15% of the oil is recovered as tar. Approximately 10% of the oil can be recovered as light oils—a mixture of benzol, toluol and naphtha—by scrubbing the carburetted blue gas with a scrubbing oil. These light oils contain about 130,000 B.t.u.'s per gallon, consequently this removal from the gas reduces the B.t.u.'s recovered in the gas. A portion of these light oils eventually condense and are recovered as drip oil.

The object of oil cracking in oil refineries is to produce a maximum amount of condensable products—principally gasoline—and a minimum amount of permanent gas. The oil cracking processes used in oil refineries are quite flexible in that the operation can be varied to produce varying amounts of gasoline, kerosene, gas oil, fuel oil, oil gas and coke. The types of cracking operation best suited to the gas industry are:

1. Residuum cracking, producing oil gas, gasoline and residuum oil.
2. Non-residue cracking, producing oil gas, gasoline and petroleum coke.

Instead of burning the producer gas, made during the blow, and heating the checker brick in the carburetter and superheater, why not burn it in a furnace of any of the well known oil cracking units and crack the oil the same as is done in an oil refinery? Heat is required to crack oil. In the manufacture of carburetted blue gas, it is produced as a by-product in the manufacture of blue gas. In oil refineries, either fuel oil or oil gas—by-products of the cracking processes—are used for generating the heat requirements.

### Typical Oil Cracking Results

The following are typical results obtained with the Dubbs oil cracking process using Mid-Continent gas oil and fuel oil:

Type of Cracking	Non-Residue		Residuum	
	Gas	Fuel	Gas	Fuel
Oil cracked	33	25	33	25
Oil cracked, API Gr.	78	65	65	51
Gasoline produced, % by volume	None	None	15	40
Residuum oil produced, % by volume	1.29	1.67	None	None
Coke produced, lbs. per gal.	12.2	20.6	16.6	11.9
Oil gas produced, cu.ft. per gal.	11,200	11,600	9,750	10,100
Heat required for cracking B.t.u. per gal.	The API Gravity of the residuum oil produced is between 7 and 9.			



The oil gas has an average heating value of 1,500 B.t.u. per cu.ft.

The gasoline produced in a marketable grade, API gravity of 60, with an initial boiling point of 100° F. and an end point of 400° F.

The heat required for cracking is equivalent to 8% of the oil cracked with non-residue cracking, with residuum cracking it is about 13% less.

#### Heat Available in Blue Gas Operation for Oil Cracking

About the only published data from which the heat available in blue gas operation for oil cracking can be calculated is contained in communication No. 122 of the Institution of Gas Engineers "37th Report of the Joint Research Committee of the Institution and Leeds University. The Controlled Operation of a Carburetted Water Gas Plant—Part II." Table 14 on page 135 contains the results of a series of eleven tests on air/steam ratio varying from 72 cu.ft. of air per pound of steam to 32 cu.ft. The results of these tests are shown in Table 1. An air/steam ratio of 40 is probably the one generally used in this country (25 lbs. steam per 1,000 cu.ft. of generator air). According to Table 1 the following results were obtained with this ratio.

Blue gas B.t.u. ....	306
Total heat in blast gas leaving generator. ....	130,000 B.t.u. per M blue gas
Sensible heat in blue gas and undecomposed steam leaving the generator .....	25,000 B.t.u. per M blue gas
Coke used per M of blue gas. ....	37.6 lbs.

Since the sensible heat in the blue gas and undecomposed steam can be utilized in a heat exchanger to preheat the oil cracked before entering the cracking furnace, the total available for oil cracking per M cu.ft. of blue gas made may be considered as—

130,000 B.t.u. in the blast gases  
25,000 B.t.u. in the blue gas and undecomposed steam

155,000 B.t.u. total available

With bituminous coal as generator fuel, the blast gases should be richer than with coke. According to a paper on "Bituminous Coal as Generator Fuel," A. G. A. Proceed-

ings 1926, page 928, producer gas made with bituminous coal has a heating value of 125 B.t.u. per cu.ft. and contains 58.7% N<sub>2</sub>. The amount of generator air used per M cu.ft. of carburetted blue gas ranges from 1,000 to 1,100 cu.ft. The heating value of the blue gas is 320 B.t.u.

The amount of producer gas made per cu.ft. of generator air was calculated from the N<sub>2</sub> in the producer gas, to be 1.35 cu.ft. (79/58.7). If 1,000 cu.ft. of generator air is used per M cu.ft. of carburetted blue gas made—530 B.t.u.—the producer gas made will be 1,350 cu.ft. and will contain 170,000 B.t.u.'s (1,350 × 125). Since a 530 B.t.u. carburetted blue gas contains approximately 85% blue gas the

TABLE 2

NON-RESIDUE CRACKING  
Estimated Results of Combined Operation

Oil Cracked	Gas	Fuel	Gas	Fuel
Generator fuel used	Coke	Coke	Coal	Coal
Gals. cracked/M cu.ft. blue gas	13.8	13.3	17.8	17.2
Cu.ft. oil gas/M cu.ft. blue gas	168	274	218	355
Total gas/M cu.ft. blue gas	1,168	1,274	1,218	1,355
Total gas, B.t.u./cu.ft.	477	562	531	631
Gals. cracked/M cu.ft. total gas	11.8	10.5	14.6	12.7
Gals. gasoline/M cu.ft. total gas	9.2	6.70	11.4	8.25
Coke made, lbs./M cu.ft. total gas	15.2	17.6	18.8	21.2
Total fuel required, lbs./M cu.ft. total gas	32.5	29.9	31.2	28.0
Extra fuel required, lbs./M cu.ft. total gas	17.3	12.3	12.4	6.8

TABLE 3

RESIDUUM CRACKING  
Estimated Results of Combined Operation

Oil Cracked	Gas	Fuel	Gas	Fuel
Generator fuel used	Coke	Coke	Coal	Coal
Gals. cracked/M cu.ft. blue gas	15.9	15.3	20.6	19.8
Cu.ft. oil gas/M cu.ft. blue gas	267	182	341	236
Total gas/M cu.ft. blue gas	1,267	1,182	1,341	1,236
Total gas, B.t.u./cu.ft.	554	485	620	546
Gals. cracked/M cu.ft. total gas	12.5	13.0	15.4	16.0
Gals. gasoline/M cu.ft. total gas	8.15	6.60	10.00	8.20
Gals. residuum/M cu.ft. total gas	1.88	5.20	2.30	6.40
Total fuel required, lbs./M cu.ft. total gas	30.0	32.2	28.4	30.8

producer gas produced per M cu.ft. of blue gas will contain 200,000 B.t.u. (170,000/.85). This is the heat of combustion of the producer gas exclusive of any sensible heat.

Using bituminous coal as generator fuel it will be impractical to utilize the sensible heat of the blue gas and undecomposed steam to preheat the oil cracked in a heat exchanger. The tar liberated in the distillation of the coal will leave the generator as tar vapors along with the blue gas and condense in the heat exchanger. The tar thus deposited will cake and cause stoppages.

Summing up, therefore, the heat available for oil cracking in blue gas operation, per M cu.ft. of blue gas made, should be—155,000 B.t.u. with coke as generator fuel 200,000 B.t.u. with bituminous coal as generator fuel

#### Combined Operation.

Knowing—

1. The heat required to crack oil.
2. The results obtained with a cracking process.
3. The heat available for cracking in blue gas operation, it is possible to calculate the results that should be obtained by combining blue gas manufacture with oil cracking.

Table 2 shows the results with non-residue cracking with coke and coal as generator fuel cracking gas oil and fuel oil. Table 3 shows the results with residuum cracking.

These calculations are based upon—

1. Using the oil gas produced for enriching the blue gas.
2. Using the petroleum coke produced with non-residue cracking as generator fuel.

TABLE 1

#### BLUE GAS OPERATION

Available Heat Developed with Various Air/Steam Ratios

Air/steam ratio, cu.ft. air /lbs. steam	72	68	64	60	56	52	48	44	40	36	32
Blue gas made M cu.ft./hr.	102	106	111	115	118	122	126	128	133	137	140
Blue gas B.t.u.	315	314	313	312	311	310	309	307	306	303	301
Coke, lbs./M cu.ft. blue gas	50.0	47.5	45.8	44.0	42.7	41.3	39.8	39.0	37.6	36.3	35.3
Total heat in blow gas, therms/M cu.ft. blue gas	2.48	2.27	2.10	1.93	1.79	1.64	1.50	1.42	1.30	1.19	1.11
Sensible heat in blue gas + steam, therms/M cu.ft. blue gas	.25	.24	.24	.24	.24	.24	.24	.25	.25	.25	.27
Total heat therms/ M cu.ft. blue gas	2.73	2.51	2.34	2.17	2.03	1.88	1.74	1.67	1.55	1.44	1.38



3. Producing a 306 B.t.u. blue gas with coke and 320 B.t.u. with coal.

4. Using 38 pounds of generator fuel per M cu.ft. of blue gas made.

#### Plant Construction and Operation

The oil cracking operation requires a continuous supply of heat to the oil cracking furnace. In order to obtain such a supply it is proposed to operate two generators in step. That is, when one generator is being blasted the other is making blue gas. This requires using the same length blast and make period. A spare generator should be provided for operation in case a generator must be shut down. Automatic grates and chargers would be valuable in eliminating shut downs for charging and clinking. With automatic controls, a short operating cycle can be used which will produce a more uniform grade of producer gas for the cracking furnace.

A blast pressure of only 20" W.C. was used in the English tests from which the heat available for oil cracking with coke was calculated. The heating value of the producer gas made with this low pressure is higher than it is in this country where much higher blast pressures are used. It may be necessary therefore to use lower blast pressures and make a richer producer gas during the blow. This will increase the generator fuel used. The calculated results of combined operation in Tables 2 and 3 are based upon 38 lbs. of generator fuel per M cu.ft. of blue gas made which is 20% to 25% higher than the results actually obtained with high blast pressures. The more oil that can be cracked per M cu.ft. of blue gas made the more economical is the operation even though the generator fuel is increased. The most economical blast to use is one thing that should be determined.

The operation of the oil cracking unit is continuous. It is not shut down except for cleaning carbon from the tubes in the furnace. At such times the unit is out of service from 36 to 48 hours. These shut down periods amount to about 10% over a year's period. The gas generators should therefore be connected to a carburetter and superheater so that carburetted blue gas can be made during such shut down periods. The oil gas from the cracking unit will be free from tar and condensable vapors. It will not be free of sulphur. It should therefore be mixed with the blue gas before purification. The gas should also be free of liquid phase gums.

Such a plant would be operated as a base load plant, similar to a coke oven plant. Since the gas made would be identical with carburetted blue gas, the two gases can be mixed in any proportions.

#### Cost of Oil Cracking Plant

The following shows the estimated cost of a 500 and 1250 barrel per day oil cracking plant for non-residue operation.

The cost will be slightly less for a residuum cracking plant. For example, a plant capable of cracking 350 bbls. per day with non-residue cracking will crack 500

	500 Bbls.	1250 Bbls.
Tank car unloading equipment, no trackage.....	\$ 1,700	\$ 2,400
Charge tanks, heaters and piping <sup>1</sup> .....	8,800	13,700
Cracking unit .....	100,000	175,000
Coke handling equipment.....	4,000	6,000
Gray towers and polymer towers.....	11,000	24,000
Pressure gasoline stabilizer and auxiliary equipment.....	3,000	4,000
Pressure gasoline receiver tanks and piping <sup>2</sup> .....	5,000	8,000
Gasoline recovery plant.....	10,000	16,000
Gasoline sweetening equipment.....	4,500	6,000
Gasoline storage tanks.....	5,600	9,300
Circulating water cooling system <sup>3</sup> .....	6,000	8,400
Steam Plant <sup>4</sup> .....	8,000	15,000
Gas compressor for low-pressure gas.....	1,500	2,100
Paid up Gray Process Royalty \$35.00/bbl. daily average gasoline production .....	11,375	28,437
Total .....	\$180,475	\$318,337
Total cost per bbl. per day.....	360	254

<sup>1</sup> Includes 2-3500 bbl. tanks for 500 bbl. plant and 2-7500 bbl. tanks for 1250 bbl. plant.

<sup>2</sup> Includes 3-500 bbl. tanks for 500 bbl. plant and 3-1000 bbl. tanks for 1250 bbl. plant.

<sup>3</sup> Includes 2-1500 bbl. tanks for 500 bbl. plant and 2-3500 bbl. tanks for 1250 bbl. plant.

<sup>4</sup> 500 gal. per min. for 500 bbl. plant and 1000 gal. per min. for 1250 bbl. plant.

<sup>5</sup> 80 bhp. plant for 500 bbl. plant and 150 bhp. plant for 1250 bbl. plant.

bbls. with residuum cracking. The cost will also vary with size of the cracking plant. A larger plant will cost less per barrel of rated capacity while a smaller plant will cost more. A plant smaller than 350 barrels is impractical.

A 500 barrel cracking plant should be adequate to produce 2,000 M cu.ft. of total gas per day—blue gas plus oil gas. A 1250 barrel plant should be adequate for 5,000 M cu.ft. per day.

#### Cost of Oil Cracking Operation

The cost of oil cracking operation is usually figured on a basis of per barrel of oil cracked. Since it is dependent upon various factors such as size of cracking plant and type of cracking, no operating costs are included. It is believed, however, that for any particular situation the cost can be estimated from the following data:

Labor requirements: An operator and helper per shift is required to operate a cracking plant having a capacity of 2,000 barrels or less per day. This is with residuum operation. With coking or non-residue operation additional labor is required for removing coke from the coking chamber. This will require the equivalent of one additional man per shift.

Utilities: This includes steam, water and electricity. The amounts required per barrel of oil cracked are approximately as shown in the table below.

Type of Operation	Non-Residue	Residuum
Steam, 125 lbs. pressure.....	131 lbs.	56 lbs.
Water .....	1120 gals.	816 gals.
Electricity lighting at night.....	0.5	0.5 kw.hr.
Air for cleaning tubes 6-8 hrs./mo.....	200 cu.ft./min. at 200 lbs. pr.	200 cu.ft./min. at 200 lbs. pr.

Maintenance: With residuum operation maintenance expense is approximately 1 cent per barrel of oil cracked; with non-residue operation it is 2 cents.

Royalty: Most of the successful oil cracking processes are patented, a license must therefore be obtained to use them. Such a license usually includes a royalty charge amounting to approximately 10 cents per barrel of oil cracked.

In addition to this expense will be the cost of the oil cracked.

The revenue from the sale of gasoline and residuum oil will be a credit to the operation.

#### Gas Production Cost

In addition to the cost of operating the cracking plant there will be the cost of blue gas production including labor, steam, purification, miscellaneous, maintenance and generator fuel. With non-residue operation, the latter will include the cost of the additional generator fuel required in excess of the petroleum coke that will be available from the oil cracking operation. The cost of labor, steam purification, maintenance and miscellaneous per M cu.ft. of the combined blue gas and oil gas should be approximately the same as present carburetted blue gas operation.

#### Disposal of Gasoline and Residuum Oil

Since approximately 10 gallons of gasoline will be produced per M cu.ft. of total gas made, its disposal at a reasonable price may be a real problem. It may be desirable, therefore, to dispose of it through an oil company. The selling commission in such a case will be between 10 and 15 cents per barrel sold.

*Economics*

Due to variations in oil and gasoline prices in different sections of the country it would be impossible to submit any estimates on the net cost per M cu.ft. of gas produced by this scheme. Estimates have been made for one or two special locations in the middle west based upon the prevailing prices of fuel oil and gas oil and assuming that the gasoline can be sold at about a cent a gallon below the tank car price. These estimates showed:

1. That compared with water gas operation, a reduction of 50% in gas production cost may be possible.
2. That an annual gas production of 500 million cu.ft. or more is necessary.

Producing 10 gallons of gasoline per M cu.ft. of gas made, a variation of a cent a gallon on the gasoline sold would change the net gas production cost 10c per M cu.ft. This is compensated or offset to a considerable extent by similar variations in the price of the oil used for cracking stock. A study of the prices of gasoline, gas oil and fuel oil f.o.b. Group III Oklahoma for the past ten years showed that the price of gas oil and fuel oil varied with the price of gasoline. The variation was not proportional.

**DETERMINING GAS INPUT RATES**

(Continued from page 266)

(point indicated on Figure 9 by circle). Similarly, other points are determined by substituting other values for  $I_1$  and  $P_1$  in equation (7) and solving for  $P_2$ . A tabulation of the results obtained by these calculations are shown in Table 2 and were employed in constructing the chart of Figure 9. It is interesting to note that a tabulation such as is shown in Table 2 could be amplified and used in conjunction with the simple manometer-form of the device illustrated in Figure 1.

Errors introduced in the measurement of fluid flow by this method are for the most part small if proper care is taken in the selection of a sensitive gage and an accurately drilled orifice ( $A_2$ ). Orifice coefficients of discharge vary with the types of orifices and will depend on the angle of approach, length of channel, drill size, pressure and through-put. Each orifice should, therefore, be calibrated for precise work. As indicated in the foregoing, coefficients selected from Figure 8 are sufficiently accurate for most purposes. The orifice should be accurately drilled so as to permit accurate determination of its area. Errors attributable to the

orifice are controllable and with proper workmanship should not be appreciable.

Manifold pressure can be most conveniently measured under static (no flow) conditions as described in a preceding paragraph, since there is usually no ready means of making this measurement under normal flow conditions. It is evident that the manifold pressure may be measurably lower with flow than under static conditions, due to friction losses in piping and controls. Moreover, the manifold pressure would be less without the device in place ( $Q_1$  flow) than with the device in position ( $Q_2$  flow). The magnitude of error introduced would, of course, be variable. The total error found during experimental work in the development of the instrument has not exceeded 2 per cent.

The instrument may be used either to determine the existing rate of gas flow to a burner or to adjust the flow to some desired rate. The fitter first removes the burner exposing the orifice fitting and then attaches a flexible tube equipped with a suitable connection to the orifice hood, as shown in Figures 1 and 2, closes the calibrated orifice at the outlet of the device chamber, and opens the gas valve admitting manifold pressure to the pressure gage. Thus, the manifold pressure is established and the selection of the appropriate pressure line on the chart may be made. Next, gas is permitted to flow through the system with a consequent drop in the static pressure in the chamber. The observer follows the selected manifold pressure line until it is intersected by the calibrated needle. At this point a reading is made, which indicates the flow which would exist through the orifice of the appliance without the device in place. Adjustments of the orifice to obtain desired flows can usually be made without detaching the instrument.

It is conceivable that other arrangements of this principle may be devised for convenience in operation, the applications disclosed herein being of an illustrative nature only. For example, it would be possible to construct an instrument which would operate a signal, such as a light or a bell, when a predetermined pressure was reached in the chamber of the device. Such an ap-

plication is illustrated by Figures 4, 5, and 6. It should also be evident that other types of charts and pressure indicating or recording elements governed by the principle evolved could be employed.

**LOYALTY ALONG THE GAS LINE**

(Continued from page 272)

of a possible thousand who were similarly exposed, suffered any lasting ill effects.

Another gratifying thought comes from the fact that while this lost-time injury broke a splendid total of perfect months, it certainly took an old-fashioned—rip-roaring—hell-bender of a northwester to do it!

Such is Loyalty along the Gas Line!

**HOME SERVICE CONFERENCE**

(Continued from page 277)

sort of advertising is read? What sort of radio programs are desired? What activity in Home Service is best accepted? The results were presented in chart form and were most enlightening.

In the schools and colleges, courses in equipment are given in some instances to prepare students for home service work. Mrs. Prudence Connors described such a demonstration course at Syracuse University. A paper by Mrs. Chase Going Woodhouse of the Institute of Women's Professional Relations in New London, Connecticut, outlined the need for college students to have some means of securing practical experience for entering this work.

Excellent cooperation was given by the manufacturers who arranged for a "get-acquainted" dinner on Tuesday evening with the compliments of the Association of Gas Appliance and Equipment Manufacturers. At this dinner Lyle Harvey of the Bryant Heater Company acted as host in his capacity as a member of the Executive Board of that Association. On Thursday evening another dinner was presented to the group with the compliments of Servel, Inc. It was held at the Great Lakes Exposition Grounds and from there the guests were escorted to the broadcasting studio to hear the "March of Time" broadcast which is sponsored by this company. Gordon Blum, district manager of Servel, Inc., acted as host, assisted by Leone Waddell and Helen Holloway of the Home Economics Department.

During a conference recess period each morning, refreshments were served with the compliments of the Roberts and Mander Stove Company of Philadelphia, whose home service director, Jane Roberts, is a member of the Home Service Committee. In the afternoon, recess refreshments were served by the American Stove Company through its committee member, Dorothy Shank. "Flowery" compliments in the form of gardenias were presented by the Bryant Heater Company during the opening registration.

## Testing Laboratories

R. M. Conner, Director

Managing Committee: J. S. DeHart, Jr., Chairman

N. T. Sellman, Secretary

# Approval Requirements for Hotel and Restaurant Ranges Expanded

**M**ANY improvements have been made during the past few years in the application of gas to hotel and restaurant equipment. Likewise, many developments have taken place in the field of gas appliance accessories for use on such appliances. In view of these facts, it was felt desirable by the Subcommittee on Approval Requirements for Hotel and Restaurant Ranges to prepare a revised edition of the American Standards for such appliances. This committee, which is headed by T. J. Gallagher of The Peoples Gas Light and Coke Company, at its meetings in Cleveland on February 18 and 19 and at Kansas City on May 7, completed extensive revisions for inclusion in the second edition of the hotel and restaurant range standards which will become effective January 1, 1938.

### New Standards Set Up

The revisions and additions to the requirements adopted by the subcommittee at its February meeting were printed and some 1,500 copies distributed to member companies of the American Gas Association and other interested parties for criticism. Comments received, coupled with additional research data provided by the Laboratories, were reviewed at the Kansas City session on May 7 and the revised standards completed in final form. The standards were reviewed and approved by the A.S.A. Sectional Committee, Project Z21, A. G. A. Approval Requirements Committee at the spring meeting of that body on June 24 and 25. The revised standards will not be printed until after approval as American Standard by the American Standards Association. Mimeographed copies, however, will be completed and made available in July.

The changes and additions adopted are rather extensive and it is felt that the nature of some of them and the reasons prompting their enactment may be of interest.

It should first perhaps be noted that the construction requirements have been expanded to cover appliances for use also with propane and butane-air gases, and that performance requirements have been included for hotel and restaurant ranges for use with such gases.

The current requirements for burners specify that burners must be cored castings. These were changed to permit other types of construction equivalent in substantiality and durability so as to give manufacturers greater latitude in appliance and burner design. Similarly, cylindrical or conical machined socket joints secured by set screws



*Subcommittee on Approval Requirements for Hotel and Restaurant Ranges, left to right: G. S. Morley and Lee Van Cleve, Majestic Manufacturing Company; I. V. Brumbaugh, American Stove Company; F. R. Wright and R. M. Conner, A. G. A. Testing Laboratories; T. J. Gallagher, (chairman), The Peoples Gas Light and Coke Company; H. W. Carnes, Prestolite Company, Inc.; W. Z. Friend, Phillips Petroleum Company; W. M. Cowzens and R. C. Gregg, A. G. A. Testing Laboratories; C. C. Winterstein, The United Gas Improvement Company; and W. D. Antrim, Roberts and Mander Stove Company*

## By FRANKLIN R. WRIGHT

A. G. A. Testing Laboratories

between mixers and burner heads are not permitted under the current standards, but under the revised requirements, machined joints of tight construction permanently secured by riveting, bolting or a bolted flange would be permissible.

While bent pipe manifolds were formerly prohibited, they may be used under the revisions proposed, when properly constructed. Sheet metal burner boxes when constructed of less than 18 gage material must have a rust-resisting finish in order to be acceptable under the revisions recommended. Oven pilots must be equipped with suitable port tips so as to avoid excessive corrosion or burning away of the end of the tubing resulting in improper ignition, and all gas piping, tubing and fittings, including orifice fittings, must be rigidly supported or securely held in place.

Aluminum tubing is not permitted to be passed through insulating material of other than neutral reaction, unless it is adequately protected from such insulation. Oven and broiler burner valves, under the new hotel and restaurant range requirements, must be of the self-latching type so as to prevent them being turned on accidentally. Since ranges are usually installed in batteries or immediately adjacent to other kitchen equip-

ment, name plates are required under the revised standards to be easily accessible and legible from the front of the range when the appliance is installed as it would be in service.

The most important additions to the construction requirements relate to accessories supplied on hotel and restaurant ranges, such as thermostats, burner valves, automatic devices to prevent escape of unburned gas, draft hoods, gas pressure regulators and semi-rigid gas appliance tubing and fittings. All such accessories must, under the revisions proposed, comply with the construction requirements specified in the listing standards. In the case of draft hoods, the applicable listing requirements are included in their entirety. While there are no listing standards for lighters, a number of new provisions for automatic lighters have been added. These are similar to the provisions for lighters specified in the standards for domestic gas ranges.

The correlation of the various approval requirements with the listing standards for accessories is in line with the instructions of A. S. A. Sectional Committee, Project Z21, A. G. A. Approval Requirements Committee, and is based on the reasoning that it is just as important, if not more so, for accessories used on approved appliances to be well designed and constructed as it is for accessories tested and certified as separate devices, since the safe, durable and satisfactory performance of an approved appliance



depends to a considerable degree on the service rendered by the accessories supplied with it.

The various listing requirements for accessories were drafted by committees of experts in the respective fields concerned, and their desirability and practicability have been proven through application by the Laboratories over the period of the past two years and the advancements made in the perfection of such devices as a result of this program.

Many other minor changes have been proposed in the construction requirements for hotel and restaurant ranges, the reasons for which will be more or less self-explanatory from reading the text. Copies of the revised standards may be secured from the American Gas Association Testing Laboratories, 1032 East 62nd Street, Cleveland, Ohio, or from the Pacific Coast Branch Laboratory at 718 Towne Avenue, Los Angeles.

#### *Performance Requirements*

From the standpoint of performance, many important changes in, and additions to, the requirements have been made which should insure more satisfactory and efficient equipment. The combustion tests have been strengthened and requirements added to insure proper functioning of burners and pilots under all reasonable conditions of service. Several additional requirements cover more completely the performance of automatic lighters while burner valves must comply with the performance requirements specified in the listing standards. These tests on valves are designed to insure adequate strength, freedom from sticking, leakage, and durability commensurate with the expected life of the range. In addition, maximum permissible burner valve body temperatures are limited to 300 degrees Fahrenheit unless valves are provided which will comply with the performance requirements for gas burner valves when tested at the higher temperatures to which they may be subjected.

Probably the most significant additions to the requirements are those setting up minimum permissible efficiencies for solid top sections, open top burners, and ovens. Under the revised standards both hot top and open top ranges must produce a thermal efficiency of at least 40 per cent. In the case of ranges for use with propane gas, the minimum permissible efficiencies are 45 per cent and 40 per cent for open and closed top ranges respectively. The same requirements apply to butane-air gas as those covering ranges for use with city gases.

Requirements also have been set up to insure economical oven performance. These requirements specify that insulated ovens must not require a gas input of more than 3,500 B.t.u. per hour per cu.ft. of oven space to maintain the oven at a temperature of 430° F. above room temperature. As a result of research conducted by the Testing Laboratories a cookie baking test similar to that as specified in the requirements for domestic gas ranges was substituted for the biscuit baking test included

in the current standards. Comparative tests using cookies and biscuits on a number of modern hotel and restaurant ranges indicated that the use of the cookie test gives a much better indication of the heat distribution characteristics of an oven than was evidenced by the use of biscuits. Additional tests were added for oven thermostats over and above requiring compliance with the listing standards for such controls. One of these tests specifies that the time required to raise the temperature of the oven from room temperature and maintain it constant at a point between 480 and 520° F. must not exceed one hour.

In reviewing the standards for hotel and restaurant ranges the subcommittee did not overlook the performance of broiler sections. A new requirement was adopted similar to one employed in the testing of domestic gas ranges specifying that broilers must be so designed and constructed that when operated at the manufacturer's rating the average broiler temperature may be increased from room temperature to 600° F. above that point within 20 minutes after the gas is ignited.

Performance requirements have been added for draft hoods and automatic devices to prevent escape of unburned gas, while the performance of regulators, semi-rigid tubing and fittings, thermostats and burner valves must conform to the listing standards. Although other changes in, and additions to, the current standards have been made, the ones touched on above are of the greatest significance.

#### *Other Recommendations*

Other action taken by Mr. Gallagher's committee of considerable interest includes recommendations to the Approval Requirements Committee that: (1) the Subcommittee on Approval Requirements for Hotel and Restaurant Ranges be authorized to draft requirements for unit broilers and deep fat fryers, and that additional manufacturer and utility representatives be added to the subcommittee accordingly; (2) an additional subcommittee be organized to draft requirements for portable bake ovens, and (3) another committee be appointed to prepare approval requirements for counter appliances, such as griddles, hot plates, waffle irons, toasters, coffee urns, etc.

Mr. Gallagher cited many instances in Chicago wherein the American Standard Approval Requirements for Hotel and Restaurant Ranges have been invaluable in eliminating from the market shoddy, inefficient and unsafe appliances and in securing department store and dealer cooperation in merchandising high grade hotel and restaurant range equipment. Others have cited similar experiences, all of which have made the competition with other fuels more easy to overcome and produced greater satisfaction on the part of the customers in the use of gas for commercial cooking. The revised standards which are now in the process of preparation cover many significant points of construction and performance which should greatly enhance the value of the standards to the industry.

## Joins A. G. A. Staff in Cleveland



Louis O. Howell

**L**OUIS O. HOWELL, industrial engineer in the Southern California Gas Company, severs a ten-year connection with the gas industry in Los Angeles on June 15, to join the research staff of the American Gas Association Testing Laboratories in Cleveland.

Mr. Howell, a graduate of Stanford University, entered the service of Los Angeles Gas and Electric Corporation in 1927, being employed successively in the gas distribution department, the valuation department, and the sales department. In the latter department he served as an industrial gas utilization engineer, and continued in that capacity when the Los Angeles Gas and Electric Corporation was merged with the Southern California Gas Company in May of this year.

He will begin his new duties in Cleveland on the first of July, working on research problems connected with industrial utilization of gas.

## A.G.A. Laboratories Employ Home Economist



Gertrude J. Stanyon

**G**ERTRUDE J. STANYON, who was recently appointed home economist for the American Gas Association Testing Laboratories, assumed her new duties in Cleveland on June 7.

The Laboratories have for some time felt the need of closer contact with the viewpoints of consumers and home economists in its standardization work, certain of its research activities in domestic gas utilization and as an aid in its cooperation with the home service branches of the industry. Mrs. Stanyon's experience in the fields of appliance manufacturing, consumer education and advertising particularly, well qualify her for a position of this kind. She received her Bachelor of Science degree in H. E. from The Stout Institute, Menomonie, Wisconsin, and has done graduate work at the University of Minnesota and at Columbia Hospital in Milwaukee.

She began her Home Economics activities in Wisconsin schools, where she supervised day school and adult homemaking for seven years. Later she joined the home



service staff of the Malleable Iron Range Co., Beaver Dam, Wisconsin. For several years she was home service director for the old Fuller-Warren Company in Milwaukee.

During the past two years, Mrs. Stanton's work with the Hutchinson Advertising Co., Minneapolis, has kept her in constant touch with the home economics departments of colleges and universities, women's magazines, utility companies and manufacturers. She recently completed for that company a year's demonstration program in the New England States on the Pillsbury Flour Mills account. This has meant particularly close contact with homemakers and their problems throughout that territory, and an added understanding of utilities', manufacturers', and consumers' viewpoints.

## Chemical Society Plans Combustion Symposium

THE Division of Gas and Fuel Chemistry of the American Chemical Society has completed plans for an interesting symposium on gaseous combustion for the meeting of the society in Rochester, N. Y., the week of September 6. The symposium has been arranged for Thursday and Friday, September 9 and 10.

Government and college authorities as well as company and operating men are well represented on the list of speakers who will discuss gas combustion problems. Divisions of the subjects on the program include: Kinetics of Ignition, Flame Propagation, Inflammation Limits, Internal Combustion Engines, Problems in Fuel Rating, and State of the Burned Gas.

## Degree-Day Handbook

[*Degree-Day Handbook*, by Clifford Srock and C. H. B. Hotchkiss; published by *The Industrial Press*, 148 Lafayette St., New York. 298 pages, 6 x 9 in., green semi-flexible binding, 29 tables; 27 illustrations, including a degree-day map of the United States. Price, \$3.]

IN order to consolidate the considerable amount of degree-day data which has been accumulated over a period of years and in order to present in compact and usable form complete information on the applications and derivation of the degree-day unit, *Heating & Ventilating* has published its new Degree-Day Handbook. This book is useful both to the operating engineer as a guide to operating efficiency of his plant, and to the designing engineer in estimating fuel consumptions of buildings.

In a 60-page table, figures showing the normal number of degree-days, by months, for 1,064 cities are presented. These figures are based on averages covering periods from 10 to 50 years.

For the first time the actual number of degree-days by months in recent heating seasons (1927-36) for 54 large cities is available between the covers of one book. The book embodies also a new idea in

determining the average temperature of the heating season by using the idea of the degree-day. This information, presented in a table covering 411 cities, gives not only the average temperature for the heating season but the length of the season in days, the beginning and ending dates of the heating season, together with recommended design temperatures, and record high and low temperatures.

The book contains 14 reference tables included in which are tables of degree-days for industrial heating, tables on the heating value of various fuels and fuel constants for predicting fuel consumption.

The second portion of the book is devoted to three chapters describing how use has been made of the degree-day.

## Florida Builder Chooses Gas

TWENTY-FOUR all gas kitchens equip the new \$100,000 Lake of the Woods Apartments, built by Howard Randall in Orlando, Fla.

This apartment building is modern to the very last appointment, and the selection of gas equipment is a decided triumph for gas in this modern setting, particularly in view of the fact that the city of Orlando has its own municipal electric plant.

The 24 gas efficiency kitchen units were installed by Florida Public Service Company of the Associated System. They are all metal units equipped with gas range, gas refrigerator, sink and utility drawers. In them, one may prepare anything from coffee and toast to a nine-course dinner.

## RANGE OF TOMORROW

(Continued from page 275)

ments were treated in the same manner and the customer was educated to the need for the improvement. Contrast this with our practice in connection with the oven heat control. This is a device which is all but absolutely essential. It was developed on a commercial basis in 1919 and still more than 20% of the ranges are being sold without it. No range should have been sold after 1930 without an oven heat control. The fault is not with an individual or group. There are fundamental underlying causes which we should correct. The most obvious cause is the lack of ability on the part of the gas industry to take any united action.

In summing up, it can be said that the best gas ranges which are available today can fulfill the customers' needs far better than electric ranges. The public acceptance of these ranges has not been satisfactory, however, and this is our greatest need. The plan for a set of secondary requirements appears to be the best means of getting this desired customer acceptance, but it will require a very close spirit of cooperation. This should also accomplish the desired result in technical improvement, which is so necessary.

## \$1,000 Reward Backs Gas Cooking; No Takers

OFFERING \$1,000 reward to "any individual, organization, group or firm who will submit any actual proof and form of cooking on any domestic range available at present, using any fuel, that cannot be duplicated on modern gas ranges as to quality, appearance or taste," the Nashville Gas and Heating Company, Nashville, Tenn., caused a mild sensation with its advertisement of May 23 in local newspapers.

The offer was open until June 5, 1937, and on June 6 another advertisement appeared extending the time to June 12. There had been no challenges to the statement nor had there been anyone to claim the reward. According to William E. Leverette, general sales manager, "the comment regarding the publicity was excellent, but there were no takers. The nearest thing we had to an answer was from a customer who stated that she could do more on two modern gas ranges than we could on one."

## Gas House Heating Sales Gain

EFFORTS of the Public Service Electric & Gas Co., Newark, N. J., to increase the use of gas for house heating continue to meet with success. In the first five months of this year, 732 customers of Public Service system made arrangements to install gas heating, compared with 489 in the like period of 1936. There were more than 5,000 homes and other buildings heated with gas supplied by the Public Service system on June 1, 1937.

## A. G. A. CONVENTION

(Continued from page 256)

Professor C. C. Furnas, of Yale University, will develop the fundamentals of scrubbing from the theoretical viewpoint, at the same time pointing out their practical applications. The paper will include the removal of gasoline from natural gas and therefore will be of interest to natural gas men. Dr. Scott Ewing, National Bureau of Standards, Washington, D. C., will make a report at this session on the results of his research work on the corrosion of pipe lines.

Two other subjects expected to find their place on the Technical Section program are: "How Polymerization of Oil Gases Will Affect the Gas Man" and "Problems of Regulator Freezing." The latter paper will deal with the formation of hydrates in natural gas lines and their prevention by elimination of water and by raising the tem-

perature of the gas before the pressure is reduced. It will also give different ways of determining water vapor in gas and methods of reducing it, as well as various theories of heating the gas. Other factors entering into the accumulation of hydrates in regulators are also considered in this paper.

### BUILDING FOR KITCHEN EFFICIENCY

(Continued from page 253)

invariably referred to authorized manufacturers representatives for price quotations. This department works closely with such supply houses in this regard, encouraging their cooperation. Negotiations with builders are placed on a more effective basis than would maintain if representatives of this department were directly concerned in making an equipment sale.

What are the advantages of this program to the Gas Company? First is conservation of our kitchen load, which is recognized as the backbone of the gas industry. Competition is particularly active in the apartment field in this city and elsewhere, and it is recognized that modern apartment practice is of vital influence to the entire con-

struction industry. Good will of building trades, resulting from this service, is of incalculable value to our whole promotional effort. By popularizing coordinated kitchens, providing accessible units composed of standard parts, our service of the future will be greatly facilitated.

In a city like Washington the apartment dweller of today is often the home owner of tomorrow, an important consideration in a long range educational program relating to modern gas kitchen appliances.

In our estimation, benefits accruing to the Gas Company through a kitchen planning service proportionately far exceed the nominal investments entailed in such a program.

### ACCIDENT PREVENTION

(Continued from page 249)

a wealth of information as to causes, remedies, and statistical procedures are available. The successful application of experience, however, must rest upon the reasoned conviction that accident prevention work is good business. On the other hand "the tail cannot wag the dog" so a proper perspective of the work, in

view of the other operating problems is essential.

Perhaps my entire message can be summed up in stating that accident prevention work properly organized and carried on will pay dividends on a handsome basis in actual money saving and in what is even more important, those intangible things which make an organization an effective smooth-running machine which is so necessary in the business in which we are engaged.

### "PENNY WISDOM" TIE-IN

(Continued from page 262)

the model kitchen at the end of each show prevented many from casting their ballots.

The response to this promotion was highly pleasing to the theater, the newspaper and especially to the Washington Gas Light Company. It is believed that this tie-in, which participated so effectively in the glamour and mass appeal of the modern motion picture and vaudeville theater to tell the story of modern gas cookery, is one of the most powerful ever put on by this company.

## Personnel Service

### SERVICES OFFERED

**Gas Engineer—Superintendent (M. E.)**—Broad experience in supervision of coal and water gas manufacture, plant design and erection, distribution routine and construction, heating and refrigeration. Also extensive and well rounded experience in appraisals. 1133.

**Sales Engineer:** Sixteen years of gas company experience selling industrial, commercial and space heating equipment. Can make surveys and supervise installation and maintenance. Would like to represent either a progressive utility or manufacturer. 1134.

**Advertising and Publicity Writer**—with practical knowledge of selling organization to employees and to the public. Experienced in employee publications and public relations through service with large western gas and electric company and two outstanding railroads. Trained thoroughly in modern advertising and publicity methods. Exceptional references from executives. 1135.

**Salesman**—experienced in practical selling and sales promotion of air conditioning equipment, gas appliances, pipe fittings. Has handled men and advertising, managed branch offices, organized and directed dealers. Widely travelled, knows all leading gas companies. College man. 1136.

**Engineering executive** with a wide and varied experience in gas company problems covering design, construction, operation, and appraisals. Will be available about July 1, permanent or consultant basis. 1137.

### SERVICES OFFERED

**Construction Engineer**—Graduate mechanical Engineer, wide experience in the gas industry, successful background several large companies in the design and construction of gas and electric generating plants, gas distribution also allied industrial plants in the recovery of by product. Prefer East. 1138.

**Gas Engineer.** 1937 Ph.D. graduate in Gas Engineering. Wide experience in plant operation, business administration and scientific research. Good personality. Desire operating or research laboratory connection, management of small gas company, assistant to major executive (36). 1139.

Man 31 desires opportunity—Not just a job, but a chance to learn, and to use what experience, education and practical training I have already gained. Twelve years' experience in the natural gas accounting, engineering and purchasing departments, both customers and general offices. Would make a good man for any department. 1140.

**Gas Engineer,** with solid background in operation of all kinds of manufactured gas plants. Familiar with natural gas distribution and change over. Valuation and rate case experience with Public Service Commission. Can handle executive or detailed work. Reliable, industrious and able to take hold, carry problem through. 1141.

### SERVICES OFFERED

**Manufacturer's Representative** or utility supervisor. Eight years' experience all types of gas appliances; thoroughly experienced in dealer merchandizing. Have sold for water heater and gas range manufacturers; also have utility company sales experience. Willing locate anywhere. Single (32). 1142.

Lady of refinement and executive ability, with six years' unusual sales record, having had charge of floor sales of all gas appliance equipment. Knows how to handle people, having experience in personnel work with very high type New York firm, handling large group of employees and customers. 1143.

### POSITIONS OPEN

**Industrial gas engineer,** natural gas experience, for natural gas company located in state of Ohio. State age, experience and enclose photograph with application. 0322.

**House Heating Salesman.** Experienced House Heating salesman for a natural gas company located in a middle west city. Heating rate very attractive. 0325.

**Combustion Engineer.** An immediate vacancy on the permanent staff of a leading organization now available. Must be experienced in application of manufactured, natural, propane, and butane gas for industrial purposes. Sales experience preferred. Give full details of education and experience, age, and salary expected. 0326.

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